Verbal breakups

and the interaction between syntactic structure and processing

Lotte Hendriks, 3173240

Master's thesis

Linguistics: the study of the language faculty

Utrecht Institute of Linguistics OTS

Utrecht University

August 2013

ABSTRACT

This thesis reports on a study of verb cluster interruptions; a phenomenon that shows great variation across languages. This variation will be shown to be fairly systematic, as it is the direct result of interactions of different components of human cognition; namely syntactic structure and processing. It will be argued that different types of elements that are allowed within verb clusters in different languages can be predicted from a Verb Cluster Interruption Hierarchy, which follows directly from a combination of syntactic and processing principles.

ACKNOWLEDGEMENTS

TABLE OF CONTENTS

1. INTRODUCTION

1.1 VERB CLUSTER INTERRUPTIONS

Many west-Germanic languages, such as Dutch, Flemish and Swiss-German, have a head-final word order in embedded clauses. In these languages, multiple verbs group together in a sentence final verb cluster, as in (1).[1]

(1) Ik vind dat iedereen moet kunnen lezen.
     I find that everyone must can   read
     I think that everyone must be able to read.

When an object appears in embedded clauses, it generally precedes all verbs. In certain Dutch dialects, however, non-verbal material can occur within a verb cluster.[2]

(2) a. Ik vind dat Jan een   schuur moet bouwen (Standard Dutch)
        I find that Jan a   barn   must   built
     b. Ik vind dat Jan moet een   schuur bouwen. (certain Dutch dialects)
        I find that Jan must a   barn   built
        I think that Jan must build a barn.

This thesis investigates the syntactic properties of verb cluster interruptions as well as the factors that play a role in the formation of this construction. As will be demonstrated in the next section, there is much cross-linguistic variation in the phenomenon that has hitherto not been accounted for.

1.2 VARIATION IN THE CONSTRUCTION

A significant aspect of verb cluster interruptions concerns the observed variation. Different studies of verb cluster interruptions have revealed a number of types of elements that can occur in verb clusters

---

[1] In this thesis, the term *verb cluster* will be used in a pre-theoretical sense, purely to indicate a sequence of verbs. This entails that verbs in a verb cluster do not need to form a constituent together.

[2] A different type of cluster interruption that can be distinguished is *the third construction,* exemplified in (i).

(i) …dat Jan [hem] heeft geprobeerd [dat boek te sturen]. (Den Besten & Broekhuis 1992:24)
     that Jan him has   tried   that book to send
     '…that Jan has tried to send him that book.'

The standard analysis of this construction is that this process involves a movement of the indirect object out of the embedded clause, which, if one assumes that Dutch is a head-final language, is followed by extraposition of the embedded clause. This construction will not be discussed further in this thesis.

(Verhasselt 1961, Vanacker 1964, 1970, Koelmans 1965, Hoeksema 1993, Barbiers et al. 2008, among many others). Vanacker (1970) for instance argues that in Southwestern dialects of Dutch the following types of elements can occur in a verb cluster.

type of element	example sentence	dialect spoken in
direct objects	…en ge zoudt nog moeten **uw eigen pintje** betalen. …and you would still must your own pint pay *'…and you would still need to pay your own pint.'*	East-Flanders
bare indirect objects	Hij moet regelmatig gaan zijn fazanten gaan **eten** geven. He must regularly go his pheasants go food give *'He must regularly go feed his pheasants.'*	East-Flanders
pronominal objects	…omda 'k je nu ook een keer zouden willen **wa** vragen. …because I you now also a time should want something ask *'…because I would also like to ask you something this time.'*	West-Flanders
prepositional objects	…da'k ik moeten **achter joender** wachten …that I must behind you wait *'…that I mus wait behind you.'*	West-Flanders
stranded prepositions	Daar 'adden mijn grootvader en mijn grootmoeder altijd zitten **in** weven. There had my grandfather and my grandmother always sit in weaving *'My grandfather and grandmother always weaved in there.'*	East-Flanders
predicates	…dat hij al van te zessen zou **bezig** zijn. …that he already from to six would busy be *'…that he has been busy from six o'clock already.'*	East-Flanders
resultatives	…on ze 't willen **groot** maken. …because they it want big make *'…because they want to make it big.'*	West-Flanders
prepositional adverbs	A'je maar alle dagen nog mag **naar je werk** gaan. If you but all days still may to your work go *'As long as you may go to work all days.'*	West-Flanders
adverbs	'K'eb een keer moeten **buiten** staan. I have a time must outside stand *'I had to stand outside one time.'*	West-Flanders

Table 1: types of verb cluster interruptions (Source: Vanacker 1970)

Remarkably, there is much variation amongst the Flemish dialects regarding which elements can be positioned within a verb cluster. According to Vanacker (1964), the construction is used most frequently in dialects spoken in West and East Flanders. More recently, Barbiers et al. (2008) also argue that verb cluster interruptions are most common in West-Flemish dialects. They investigated the acceptability of nine different elements across Flemish dialects.

type of element	example sentence
adpositional particle	Jan had het hele brood wel willen **op** eten. Jan had the whole bread aff want up eat *'Jan had wanted to eat the whole bread up.'*
adverbial particle	Ik denk dat je veel zou moeten **weg** gooien. I think that you much shall must away throw *'I think that you should throw out much.'*
bare singular noun	Ik weet dat Eddy morgen wil **brood** eten. I know that Eddy tomorrow wants bread eat *'I know that Eddy wants to eat bread tomorrow.'*
temporal adverb	Eddy moet kunnen **vroeg** op-staan. Eddy must can early up-stand *'Eddy must get up early.'*
bare plural object	Ik weet dat Eddy wil **varkens** kopen. I know that Eddy wants pigs buy *'I know that Eddy wants to buy pigs.'*
indefinite object	Ik weet dat Jan moet **een nieuwe schuur** bouwen. I know that Jan must a new barn built *'I know that Jan must built a new barn.'*
prepositional phrase	Ik vind dat Marie moet **naar Jef** bellen. I find that Marie must to Jef call *'I think that Marie must call Jef.'*
definite object	Ik zei dat Willy moest **de auto** verkopen. I said that Willy must the car sell *'I said that Willy must sell the car.'*
manner adverb	Ik weet dat Jan moet **jammergenoeg** vertrekken. I know that Jan must unfortunately leave *'I know that Jan unfortunately must leave'.'*

Table 2: types of verb cluster interruptions (Source: Barbiers et al. 2008)

Table 3 exhibits the number of dialects that allow each construction in each region. It demonstrates that dialects spoken in West-Flanders generally allow non-verbal material, like direct objects, within a verb cluster. This acceptability decreases as the distance to this region increases.

	West-Flanders	East-Flanders	Flemish Brabant	Limburg	Antwerp	northern Dutch
bare singular noun	20	14	7	5	2	13
temporal adverb	18	12	12	6	2	0
bare plural object	18	14	7	4	2	0
indefinite object	17	7	2	1	0	0
prepositional phrase	11	5	7	3	0	0
definite object	10	4	0	0	0	0
manner adverb	0	0	0	0	0	0

Table 3: verb cluster interruptions per region (Source: Barbiers et al. 2008) [3]

---

[3] Particles are not represented in Table 3 because they are generally allowed to interrupt a verb cluster in all variants of Dutch.

This table supports the finding that occurrences of verb cluster interruptions are regionally dependent. The results additionally indicate that certain elements are more common in verb clusters, pointing towards a hierarchic relation of the type in (3).

Figure 1: the Flemish provinces

(3)   Verb Cluster Interruption Hierarchy *preliminary version*
        particles > bare singular nouns > temporal adverbs > bare plural objects > indefinite objects > PP's > definite objects > manner adverbs

This hierarchy represents an ordered ranking of grammatical types and it reflects the possibility for an argument to occur within a verb cluster. However, as can be concluded from Table 3, the hierarchy does not reflect a strict constraint on verb cluster interruptions. For instance, interrupting bare nouns in Flemish Brabant seem to occur less often than interrupting temporal adverbs in this region, despite their lower position in the hierarchy. Even though the Verb Cluster Interruption Hierarchy does not represent a strict constraint on verb cluster interruptions, it can make strong predictions regarding the possibility for an argument to occur within a verb cluster; if an element can occur within a verb cluster, all elements lower on the hierarchy are also predicted to be allowed within a cluster.

As Barbiers et al. (2008) only investigated eight different types of verb cluster interruptions, the precise extent of verb cluster interruptions remains unclear. More importantly, previous investigations all failed to explain the observed variation.

1.3 RESEARCH GOALS

This thesis reports on a novel study of verb cluster interruptions. The types of element tested by Barbiers et al. were supplemented by more types of non-verbal constituents, occurring with multiple types of auxiliaries. The study aimed to answer the following research questions:

1)   What are the properties of verb cluster interruptions?
2)   Which factors play a role in verb cluster (interruption) formations?
3)   What can explain the observed variation in the use of the construction?

The first research question concerns the different properties of verb cluster interruptions. This includes the different types of constituents that can interrupt a cluster – varying from different types of adverbs

to different types of arguments – as well as the variation in the use of the construction amongst Dutch dialects.

The second research question concerns the nature of verb cluster interruptions. The factors that influence whether verb clusters are formed with or without an interrupting element could have a functional or a syntactic source.

Finally, the observed variation in the use of the construction is an issue that needs to be explained. In addition to the variation amongst speakers of Flemish dialects, there is a huge difference between verb cluster interruptions in Flemish and Standard Dutch; verb cluster interruptions are commonly allowed in Flemish dialects, but they are exceptional in Standard Dutch.

1.4 OVERVIEW

The next section discusses previous theories of verb clusters. A few possible approaches to verb cluster interruptions and the different predictions they make will be discussed. It will become apparent that, under certain specific conditions, elements that would otherwise move to a higher position, can remain in the verb cluster. These conditions cause variation in the acceptability of verb cluster interruptions. The question that this raises concerns the purpose of the movement requirement on non-interrupting elements.

Section 3 reports the study of verb cluster interruptions. Speakers of different Flemish dialects and Standard Dutch were asked to judge various types of verb cluster interruptions in different contexts. The effects of definiteness, complexity and syntactic structure were also tested in this study.

Section 4 analyzes the results of this investigation, which leads to a refinement of the Verb Cluster Interruption Hierarchy. A new implicational hierarchy of elements that can occur in a verb cluster will be presented. Even though the cut-off point in the hierarchy can differ for each dialect, the underlying hierarchy is always pertinent. It will be demonstrated that the Verb Cluster Interruption Hierarchy follows from an interaction of processing and syntactic principles; a processing constraint is active on elements, such as direct objects, that requires them to be syntactically close to the main verb. This preference is in direct competition with an identical preference of higher verbs to be syntactically close to the main verb. Each language user consequently has to choose between two competing structures.

One influencing factor in this choice is the underlying syntactic structure of the clause. It will become evident that the syntactic position of elements affects their ability to occur in a verb cluster. Moreover, elements that are syntactically simplex minimally affect the distance between the two verbs. Therefore, these elements are more commonly allowed in a verb cluster than syntactically complex elements.

The interaction between processing and syntactic structure will hence be shown to explain most of the observed variation in verb cluster interruptions.

Section 5 concludes the thesis and discusses the theoretic implications of the proposed analysis, as well as the questions that remain open for future research.

2. EXPECTATIONS

2.1 A FORMAL APPROACH

As discussed in section 1.2, verb cluster interruptions are regionally dependent. The cross-linguistic differences in the acceptability of various elements in a verb cluster might be the result of differences in the grammars of different dialects. This idea is explored in this section.

First, the processes that underlie a verb cluster interruption will be discussed; it will become apparent that the construction is not formed by an incorporation process, but follows from a lack of movement of the interrupting element.

The possibility for an element to remain in its base-generated position within a verb cluster could follow from syntactic principles. A syntactic theory is logically dependent on the assumed number and types of functional projections present in the structure. Auxiliaries that are assumed to occupy a high structural position include more intervening structure. These auxiliaries consequently cover more elements that can potentially interrupt a verb cluster than auxiliaries that occupy a lower position. Two approaches to syntactic structure will be explored: a classic approach in which a clause consists of a lexical projection with two or three functional projections (cf. Chomsky 1986a, Pollock 1989), and an approach in which each clause consists of a large number of rigidly ordered functional projections (Cinque 1999, 2006).

2.1.1 THE DUTCH WORD ORDER

There has been an ongoing debate regarding the head-complement order in Dutch. The underlying word order in this language is not unmistakably observable, as the word order in the main clause of this language is the opposite from the word order in the embedded clause, as demonstrated in (4).

(4) a. Ik [eet brood].
        I   eat bread
     b. …dat ik [brood eet].
          that I   bread eat
        '(…that) I eat bread.'

Verb cluster interruptions have been analyzed in different ways, depending on the assumed word order.[4] As the following (simplified) tree structures indicate, verb cluster interruptions would always require a

---

[4] I refer the reader to Den Dikken (1994) and Wurmbrand (2006) for a more extensive discussion of the many different analyses of verb cluster interruptions.

movement process, regardless of whether one assumes a head-final or a head-initial word order in Dutch.
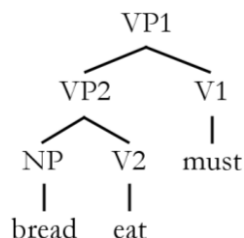
(5) a. SOV: b. SVO:
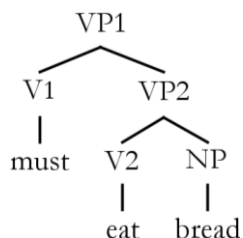
As will become clear in the next sections, in both these analyses verb cluster interruptions would have to be assumed to involve an incorporation of the noun into the main verb.

Barbiers (2000, 2008) argues that complements with a verbal core are generated after the matrix verb, whereas nominal complements are generated before the verb, as in (6).[5]

(6) a. [$_{VP}$ DPsubject [$_{V'}$ pro[6]   V [$_{CP/TP/VP}$ …]]]
     b. [$_{VP}$ DPsubject [$_{V'}$ DPobject V [$_{CP/TP/VP}$ …]]]

In this analysis verb cluster interruption comes for free by simply stating that these verb clusters lack movement.[7]

---

[5] A nice aspect of this account is that differences between Dutch and English can be reduced to a movement of the main verb to a higher position in English (Barbiers 2008:167).

(ii) a. Jan heeft [$_{VP}$ ~~Jan~~ [$_{V'}$ gezegd [$_{CP/TP/VP}$ dat hij van haar houdt]]]].
      a'. Jan has [said [$_{VP}$ ~~Jan~~ [$_{V'}$ ~~said~~ [$_{CP/TP/VP}$ that he loves her]]]]].
      b. Jan heeft [$_{VP}$ ~~Jan~~ [$_{V'}$ iets gezegd]]].
      b'. Jan has [said [$_{VP}$ ~~Jan~~ [$_{V'}$ something ~~said~~]]]].

[6] By assuming a covert pronoun in this construction, Barbiers (2008) accounts for the inability of DP's in sentences that contain a verbal complement.

[7] Alternatively, one could assume that verb cluster interruptions involve a movement after spell-out. This issue will be discussed in section 4.3.1 of this thesis.

(7)   SO$_{DP}$VO$_{VP}$:

```
              VP1
            /     \
          V1       VP2
          |       /   \
         must   NP     V2
                |      |
               bread  eat
```
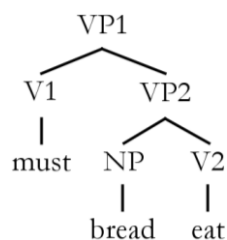
All word order analyses are in line with the view of different generative linguists such as Noam Chomsky and Richard Kayne, that there are universal restrictions on phrase structure and movement (cf. Kayne 1994, Chomsky 1995). In the next subsections, these three analyses and the predictions they make for verb cluster interruptions are discussed.

2.1.1.1 DUTCH AS A HEAD-FINAL LANGUAGE

The classic analysis of verb cluster interruptions, taken by researchers that consider Dutch to be a verb final language, is that interruptions are the result of a process dubbed *verb projection raising* (Den Besten & Edmondson 1983, Coppen & Klein 1992, Den Besten & Broekhuis 1992, among others). This process entails that a projection of the main verb is raised to a position following the finite verb, as in (8).

(8)   …dat   Marie t$_j$ wil   [$_{VP}$ dat boek kopen]$_j$. (Den Besten & Broekhuis 1992:21)
        that Marie   wants   that book buy
      '…that Marie wants to buy that book.'

Den Besten & Broekhuis (1992) argue that the sole difference between dialects that allow verb cluster interruptions and dialects that do not, is that in the latter, all arguments of a verb need to be scrambled to a position preceding the finite verb before the process of verb projection raising takes place.

(9)   …dat Marie[dat boek]$_i$ t$_j$ wil   [$_{VP}$ t$_i$ kopen]$_j$. (Den Besten & Broekhuis 1992:21)
        that Marie thatbook   wants   buy
      '…that Marie wants to buy that book.'

Support for the verb projection raising process comes inter alia from the distribution of particles, which can occur within a verb cluster in Standard Dutch. As particles are not incorporated in the verb,[8] verb cluster interruption by a particle cannot arise by a movement of the verbal head.

---

[8] Arguments for this claim follow below.

(10) …dat Jan zijn pap   niet (op) wil   (op) eten. (Den Besten & Broekhuis 1992:26)
        that Jan his porridge not up wants up eat
        '…that Jan does want to finish his porridge.'

According to Den Besten & Broekhuis, particles can scramble from the verb projection before the process of verb projection raising takes place. They suggest that the landing site of these particles is still a VP-internal position, hence accounting for the ill-formedness of (11).

(11) …dat Jan hem (*op) gisteren   (op) belde. (Den Besten & Broekhuis 1992:29)
        that Jan him   up yesterday up called
        '…that Jan called him up yesterday.'

They further argue that such a locality constraint also applies to other elements that were previously argued not to be able to scramble, such as non-specific, indefinite NP's, parts of idioms and predicatively used locative PP's.[9]

Following this view, cross-linguistic variation in the acceptability of verb cluster interruptions is dependent on which elements can be moved out of the verb projection before verb projection raising takes place. However, even though Den Besten & Broekhuis have shown that it is possible for such elements to scramble over a low adverb, they do not provide independent motivation for this scrambling process occurring in verb cluster environments.

Besides the fact that this VP-movement process is unmotivated and language-specific, there are a few other problems with this analysis. Interruption of three-partite verb clusters, for instance, would be difficult to explain, because it must be assumed that the particle moves to the left of the middle verb, while the main verb moves to its right, as demonstrated in (12).

(12) a. …dat Jan Marie moet op kunnen bellen.
            that Jan Marie must up can   call
            '…that Jan must be able to call Marie.

     b. [[[op bellen] op kunnen bellen] moet [op kunnen bellen]

The main problem of the head-final theory, however, is that it makes the prediction that all elements that occupy the same structural position, should just as easily occur within a verb cluster. Nevertheless,

---

[9] The idea that predicatively used elements can move to a higher position has also been argued for by Zwart (1994), see below.

there is a difference in verb cluster interruptions by different types of direct objects; interruptions by bare nouns are for instance more common than interruptions by indefinite objects.[10]

This problem might be overcome to a certain extent if one would assume that a language-specific incorporation process is active in verb cluster interruptions. As incorporation is generally assumed to be a process that targets terminal nodes, this accounts for single words being easier in verb clusters. Differences between other elements, such as indefinite and definite objects, might then be due to other factors, such as scrambling.[11] Incorporation is discussed further in section 2.1.1.3.

2.1.1.2 DUTCH AS A HEAD-INITIAL LANGUAGE

The common position taken by researchers that consider Dutch to be a head-initial language, is that all verb clusters have the same underlying word order in which higher verbs precede lower verbs (Kaan 1992, Den Dikken 1994, Zwart 1994, 1996, among others). In accordance with Kayne's (1994) antisymmetry hypothesis, Zwart argues that other verb orderings are the result of leftward movements of the verb, possibly preceded by a movement of other elements from the verb projection (Zwart 1994).

Zwart argues that different verb cluster orderings arise due to a licensing requirement on lower verbs, which can be fulfilled in the specifier of a higher functional projection (cf. Zwart 1996).[12] According to him, differences in verb orderings between languages are the result of the different possible functional projections where modals, auxiliaries, infinitives and participles can be licensed in different languages. This view is in line with Chomsky's (1993) proposal, which states that movement is always triggered by a requirement of the moved element to be licensed.

Essentially, Zwart argues that all elements generated in a head-complement configuration have to be licensed in a specifier-head structure at some point during the derivation.[13] This entails that elements that can break up a verb cluster also move to be licensed (Zwart 1994, 1996); however, according to him, some movements can be procrastinated until LF and can hence happen covertly.

For example, he states that particles and small clause predicates move to the specifier position of a functional projection above VP, but below the auxiliary. The verb subsequently, overtly, moves to the head of this projection, and can accordingly license the predicate. Support for this movement process comes from sentence (13)b, in which a stranded preposition occurs between the small clause predicate

---

[10] This will become evident in section 4.1.

[11] Scrambling will be discussed in section 2.1.2.

[12] It is not clear what Zwart suggests as the features that need to be licensed and can be checked in a specifier-head configuration with the higher verb. See Barbiers' (2008) proposal below for a suggestion that could be applied to Zwart's theory as well.

[13] This claim entails that other complements, such as complement clauses, need to be licensed in a specifier-head configuration as well. I refer the reader to Zwart (1994:23) for some suggestions regarding this prediction.

and the verb. Assuming that prepositions cannot lower in a structure, it has to be the case that the verb has moved to the head of a higher functional projection, followed by a movement of the preposition.

(13) a. …dat Jan de deur rood verfde met die kwast. (Zwart 1994:25)
     …that Jan the door red painted with that brush
     '…*that Jan painted the door red with that brush.*'
   a' …[$_{AgrOP}$ de deur [$_{PredP}$ rood [$_{Pred'}$ verfde [$_{VP}$ [$_{VP}$ Jan [$_{V'}$ verfde [$_{SC}$ de deur rood]]] met die kwast]
   b. de kwast waar Jan de deur rood mee verfde (Zwart 1994:25)
     the brush where Jan the door red with painted
     '*the brush with which Jan painted the door red*'

Zwart (1994) further supports his claim by arguing that when the subject of the small clause is an expletive subject, the verb has to agree with the small clause predicate; the small clause predicate and the verb hence need to be in a specifier-head configuration.

(14) Het zijn/*is kooplieden. (Zwart 1994:26)
    It are is merchants
    '*They are merchants.*'

Zwart (1996) argues that the licensing of the small clause particle can be transferred to a specifier position of a functional projection higher than the position where the licensing verb is overtly realized.[14]

(15) …dat Jan het boek (uit) moet (uit) hebben (uit) gelezen.
    …that Jan the book out must out have out read
    '…*that Jan must have finished the book.*'

This correctly predicts that verb cluster interrupting material can never follow the overt realization of the verb to which it properly belongs.

(16) …dat Jan het boek (uit) gelezen (*uit) moet (*uit) hebben.
    …that Jan the book out read out must out have

Importantly, Zwart's analysis does not make strong predictions regarding what elements can and cannot occur within a verb cluster in a given language, as he assumes that different elements can be licensed in different positions in each language.

---

[14] The interrupting element cannot be licensed in the specifier projection of the verb itself, as this position has to be used for the licensing of the embedded verb (Zwart 1996).

This analysis has the same essential problem as the head-final theory: namely, that it makes the wrong prediction that elements that are licensed in the same position should just as easily occur within a verb cluster. Again, the problem might be overcome to a certain extent if one assumes that a language-specific incorporation process is active in verb cluster interruptions.

2.1.1.3 THE TRIBULATIONS OF INCORPORATION

If verb cluster interruptions are the result of an incorporation process, cross-linguistic variation could possibly result from variation in the ability of different elements to incorporate in a verb. In this section it will become evident, however, that incorporation cannot account for the observed verb cluster interruptions.

Barbiers et al. (2008) have demonstrated that verb cluster interruptions behave different from incorporations in several respects. First, the constructions are used in dialects of different regions; where noun-incorporation is limited to dialects in the most northern part of the Netherlands, verb cluster interruptions, by for instance particles and bare nouns, occur all across the language area. Furthermore, where true incorporated heads often have a close semantic relation with the head they move to, this semantic relation with the verb is not as clear-cut with verb cluster interruptions. Finally, the position of the interrupting element with respect to infinitive markers is different; incorporated elements follow an infinite marker, as in (17)b.

(17) a. …dat Jan zijn pap niet heeft proberen (op) te (*op) eten.
   …that Jan his porridge not has tried up to eat
   '…*that Jan has not tried to finish his porridge.*'
 b. …dat Jan zijn kamer niet heeft proberen (*stof) te (stof) zuigen.
   …that Jan his room not has tried to dust suck
   '…*that Jan has not tried to vacuum his room.*'

Baker (1988) states that incorporation is a process that generally moves a head to a local higher head,[15] together forming a new complex word. He states that syntactic phrases are blocked inside words due to principles of morphology (Baker 1988:71). This entails that noun phrases, such as indefinite objects, cannot be incorporated. These elements are nevertheless quite commonly observed in verb clusters, suggesting that these elements are not in fact incorporated.

Even though Baker argues on the basis of verb cluster interruptions that morphological principles that block incorporation might be subject to linguistic variation (Baker 1988:450,n.18), there is another

---

[15] In accordance with the Head Movement Constraint (Travis 1984).

reason to suspect that verb cluster interruptions do not involve incorporation. As incorporation involves a movement process, it can necessarily not go downward in the structure. According to Baker, incorporation of a higher element into a lower element violates the Empty Category Principle, as the trace of the moved element is not properly governed (cf. Chomsky 1981). The conjecture that movement can only go upwards has recently been reinstated by Chomsky (2004). As movement is conjectured to involve a process dubbed *internal merge*, which copies an element from a phrase and moves it to the edge of this phrase, as illustrated in (18), movement can only go upwards (Chomsky 2004:110).

(18) $<\beta <\alpha, \beta>$

The unavailability of downward incorporation accounts for the fact that whereas direct objects can be incorporated in the verb in many different languages,[16] incorporated subjects, as in (19)b, are never observed.

(19) a. Yao-wir- aʔa ye -nuhs- nuhweʔ- s.   Mohawk (Baker 1988:82)
          PRE- baby-SUF 3- house-like-   ASP
          'the baby house-likes.'
      b.*Ye-wir-   nuhweʔ-s ne ka- nuhs- a
          3- baby-like-   ASP PRE house-SUF
          'baby-likes the house.'

Assuming that verb cluster interruptions arise by incorporating an element into the verb thus makes the false prediction that elements such as adverbs and VP-internal indefinite subjects, which are higher in the structure, could not occur within a verb cluster.[17]

Another argument against an incorporation approach comes from Den Besten & Broekhuis (1992), who argue that if particles could be incorporated, participle prefixation should also be allowed to be present outside the entire complex as in (20)b.

---

[16] Incorporation of a direct object in the verb occurs in Eskimo, Mohawk, Niuean, Onondaga, Southern Tiwa and Tuscarora (Baker 1988:81-82).

[17] See section 4.1 for an overview of all elements attested in verb clusters.

(20) a. stof- ge- zogen   a' op- ge- geten (Den Besten & Broekhuis 1992:33,n.5)
        dust-PRE- sucked   up- PRE- eat
     b. ge- stof- zuigd   b'* ge- op- eten
        PRE- dust-suck   PRE-up- eat
        'vacuumed'   *'eaten'*

We can hence conclude that an incorporation analysis of verb cluster interruptions runs into problems. This entails that neither the head-initial nor the head-final analysis can account for the observed variation in verb cluster interruptions. In the following section a mixed order approach will be discussed, which will be assumed in the remainder of this thesis.

2.1.1.4 THE MIXED ORDER APPROACH

As incorporation cannot account for verb cluster interruptions, I will assume an analysis in which CP,TP and VP complements follow, while nominal complements precede the main verb in the underlying word order, as has been proposed by Barbiers (2000, 2008). Only such a structure can account for verb cluster interruptions without having to assume that interrupting elements incorporate into the main verb.

Barbiers (1995, 2000, 2008) argues that auxiliaries and modals are unsaturated projections[18] that select eventive predicates, often main verbs. According to him, these projections have to be in a subject-predicate relation with each other. This predication relation is created by a process he dubs *intraposition*, which involves a movement of the embedded verbal projection to the specifier of the auxiliary projection, as in (21).

(21) …omdat hij [[AuxP[VP een boek gelezen] [heeft [VP een boek gelezen]]].
       …because he   a book read   has   a book read
       '…because he has read a book.'

This process leads to two copies of the verb phrase. As languages can make different choices regarding which copy to spell-out, different possible verb combinations can arise (Barbiers 2008). According to Barbiers, there is an intrinsic shredding condition, which prohibits spelling out parts of a phrase in its

---

[18] Unsaturated projections are projections with unfulfilled argument positions.

landing site and other parts in its base-position.[19] The available options in spell-out lead to variation across languages, influenced by sociolinguistic factors.[20]

An interrupted verb cluster of the form in (22)a can be straightforwardly explained by this theory, as the interrupting element is located in its base-generated position. However, more needs to be said about non-interrupted verb clusters. As demonstrated in (22)b, it cannot be the case that the embedded verbal projection has moved, with the object being spelled out in its landing position, while the verb is spelled out in its base-position, as this involves shredding, which is not allowed.[21] Hence, when either the interrupting element or the main verb is spelled-out before the modal, the other has to be spelled out in that position as well. Consequently, just as in the head-final and head-initial approach, it has to be assumed that these elements have moved independently to higher positions.

(22) a. [$_{ModP}$ Vmod [$_{VP}$ object/particle Vmain]]
     b. [$_{ModP}$ [$_{VP}$object/particle ~~Vmain~~] [Vmod [V$_{P}$~~object/particle~~ Vmain]]]
     b'. [$_{XP}$object/particle [$_{ModP}$ [$_{VP}$~~object/particle Vmain~~] [Vmod [$_{VP}$~~object/particle~~ Vmain]]]]

In this thesis, it will become clear that variation in verb cluster interruptions are best explained if one indeed assumes that these constructions signify the base-generated order of elements. Cross-linguistic variation in verb cluster interruptions then results from a (lack of) movement by an interrupting element. In a purely syntactic account to verb cluster interruptions, these elements can be hypothesized to move to check certain features. Movement of DP subjects, for instance, could be motivated by a requirement to check person and number features on the verb (cf. Chomsky 1995). Checking features can be weak in a given language, which allows feature checking to occur covertly in some languages (Chomsky 1995). Therefore, elements that have to move to a higher position in some languages, might remain in situ in other languages. As such features are specified in the grammar, they can differ for each language. Variability in the position of other elements could be accounted for by other movement processes, such as object shift and particle climb. As movement of adverbs could not be motivated without further stipulations, one accordingly has to assume that adverbs can be base-generated in various positions, just as in the other word order analyses.

---

[19] This condition can be violated, however, when shredding makes certain agreement relations visible. The full implications of this and other spell-out conditions proposed by Barbiers go beyond the scope of this thesis. The interested reader is referred to Barbiers (2008).

[20] An argument against spell-out options is that they are not independently motivated, since they do not correlate with any other property found in the language (cf. Wurmbrand 2006).

[21] Under the assumption that shredding is only allowed when this makes certain agreement relations visible, the projection cannot be shredded, since the main verb is the head of this projection and its features are hence always visible.

Before proceeding to the next section, a note needs to be made about scope-interactions and the underlying structure of verb cluster interruptions. Den Dikken (1994) argues that Dutch has an underlying SVO structure. He bases his theory inter alia on the observation that interrupted verb clusters are opaque to scope interactions, as sentence (23) indicates.

(23) a. …dat Jan geen toelating hee durven geven. (no permission </> dare) (Den Dikken 1994:73)
       that Jan no permission has dare give
      '…that Jan has not dared to give permission.'
   b. …dat Jan hee durven geen toelating geven. (no permission </*> dare)
       that Jan has dare no permission give

This indicates that in verb cluster interruptions, the object does not c-command the auxiliary at any point during the derivation,[22] arguing against a verb projection raising process. These scope facts can also be explained by Barbiers' (2008) approach, as the object in its base-position also never c-commands the auxiliary.[23]

2.1.2 SYNTACTIC STRUCTURE

Verb cluster interruptions thus involve elements occurring in their base-generated position. As discussed above, the possibility for elements to occur in their base-generated position could have a syntactic nature. This section discusses the predictions of a purely syntactic approach to verb cluster interruptions.

Logically, verb cluster interruptions only occur if elements are base-generated in a position below the auxiliary. This has consequences for theories in which different types of auxiliaries are conjectured to be located in different structural positions. If one assumes that clauses consist of a lexical projection VP and a few functional projections, with auxiliaries always occupying the same structural position in a given language (cf. Chomsky 1986a, Pollock 1989), no differences are expected to be found between sentences containing different types of auxiliaries. However, in an approach in which each clause consists of a large number of functional projections, each headed by a different type of auxiliary, verb cluster interruptions are predicted to be less common with auxiliaries occupying a lower structural position, as these include fewer projections.

Cinque (1999, 2006) argues that human grammars are specified for a fixed, universal hierarchy of functional projections, as specified in (24).

---

[22] This analysis crucially relies on Den Dikken's assumption that there is no such thing as quantifier raising at LF (cf. Kitahara 1992).

[23] Scope effects were also investigated in this study. The results were disappointing, as dialect speakers generally disallowed verb cluster interruption by a negative DP and only a handful of speakers allowed verb cluster interruption by a quantified noun phrase. Seeing that such a small number of participants accepted these sentences, no conclusions could be drawn on the basis of these results.

(24) [MoodP$_{speech\ act}$ [MoodP$_{evaluative}$ [MoodP$_{evidential}$ [ModP$_{epistemic}$ [TP$_{past}$ [TP$_{future}$ [MoodP$_{irrealis}$ [ModP$_{alethic}$ [AsP$_{habitual}$ [AspP$_{repetitive(I)}$ [AspP$_{frequentative(I)}$ [ModP$_{volitional}$ [AspP$_{celerative(I)}$ [TP$_{anterior}$ [AspP$_{terminative}$ [AspP$_{continuative}$ [AspP$_{retrospective}$ [AspP$_{proximative}$ [AspP$_{durative}$ [AspP$_{generic/progressive}$ [AspP$_{prospective}$ [ModP$_{obligation}$ [ModP$_{permission/ability}$ [AspP$_{completive}$ [VoiceP [AspP$_{celerative(II)}$ [AspP$_{repetitive(II)}$ [AspP$_{frequentative(II)}$]]]]]…]

(Cinque 2006:12)

According to him, each sentence of all natural languages consists of the same amount and types of rigidly ordered functional projections. These projections are all headed by, possibly covert, functional heads. Each functional head has a semantic relation with an associating adverb that can be positioned in its specifier. This entails that adverbs generally do not move, nor are they base-generated in various positions. Evidence for the universal hierarchy comes from the rigid order in which these elements occur. According to Cinque (1999), the only way in which the ordering between adverbs can change is when the lower adverb moves to an A-bar operator position, as in (25)c.

(25) a. Tratta **già**   **male** il   suo assistente.   (Italian, Cinque 1999:17)
         treats already badly the his assistant
         'He is already treating his assistant badly.'
    b.* Tratta **male già**   il   suo assistente.
         treats badly already the his assistant
         'He is badly already treating his assistant.'
    c. **Quanto male**$_i$ tratta **già**   t$_i$ il   suo assistente.
         How   badly treats already   the his assistant
         'How badly is he already treating his assistant?'

This entails that in sentences where adverbs seem to be freely positioned, it is not the adverb that has moved, but the other constituents have moved.

(26) (Probably) George (probably) will (probably) have (*probably) read the book.

Cinque argues that there are a number of DP-related functional projections positioned in between the adverbial projections, accounting for the different positions arguments can have with respect to adverbs and verbs.[24]

Many have argued against Cinque's universal hierarchy. Ernst (2002), for instance, states that the ordering amongst different types of adverbs is not as rigid as supposed by Cinque and follows directly

---

[24] Cinque argues that, as verbs can occur between DP's and adverbs, DP's cannot be adjoined to an adverbial projection, but have to be placed in a separate functional projection.

from semantic principles. He argues that adverbs can adjoin to various projections, such as DP's, as illustrated by the position of the focusing adverb between the preposition and its object DP in (27)a and between the verb and its object DP in (27)b (Ernst 2002:218-219).

(27) a. We based our verdict on [only those considerations allowed to us by law].
      b. Sylvia has bought [just those textbooks she expected to use].

As the following sentences illustrate, the adverb forms a constituent with the DP in both these constructions.

(28) a. What we based our verdict on were [only those considerations allowed to us by law].
      b. It was [just those textbooks she expected to use] that Sylvia bought.

Furthermore, even though nothing can occur between a displaced auxiliary and the subject, as illustrated in (29)a, focusing adverbs can occur in this position.

(29) a. * Has just now Bob been fired?
      b. Has only Bob been fired?

Ernst additionally demonstrates that a structure with fewer functional projections is a simpler theory, as a sentence such as (30), which can have multiple meanings, would not have to correspond to multiple syntactic structures.

(30) Michael almost loves music. (Ernst 2002:125)

In this thesis, the predictions that follow from Cinque's theory will be compared with a classic approach to syntactic structure. The investigation includes different types of auxiliaries, which have different positions according to Cinque's hierarchy, as illustrated in (31). In a classic approach, no differences are expected between sentences with different auxiliaries. Following Cinque, however, when higher auxiliaries are used, higher elements should be able to interrupt a verb cluster than when lower auxiliaries are used.

(31) [MODPepistemic kunnen *'can'* [TPpast hadden *'had'* [TPfuture zullen *'shall'* [TPanterior hebben *'have* [25] [ASPPcontinuative 'blijven' *remain* [MODPobligation moeten *'must'* [VP]]]]]]]

Cinque's hierarchy includes various fixed positions for adverbs, which makes these elements useful tools for testing this prediction. Therefore, the acceptability of five different types of adverbs occurring in different types of verb clusters was investigated in the study.

(32) [MOODPevaluative helaas *'unfortunately'* [MODPepistemic waarschijnlijk *'probably'* [TP toen *'then'* [MODPalethic noodzakelijk/mogelijk *'necessarily/possibly'* [ASPcontinuative voortdurend *'continually'* [VOICEP goed *'well'* [VP V]]]]]]]

In addition to these adverbs, the position of negation might provide insight in the part of the structure that can occur in a verb cluster. In the traditional analysis, a NegP is assumed to be positioned below IP (cf. Pollock 1989, Chomsky 1991). Cinque argues, however, that there are at least four distinct positions within the functional structure where NegP can be generated, depending on scope conditions (Cinque 1999, following Zanuttini 1997). A comparison of verb cluster interruptions by adverbs and negation in sentences with different types of auxiliaries can hence provide insight in the potential presence of several functional projections.

Importantly, if variation in verb cluster interruptions indeed has a purely syntactic origin, neither Cinque's, nor the classic approach to clause structure predicts a single dialect to distinguish verb cluster interruptions by different elements of the same syntactic category that are base-generated in the same structural position within the VP. Elements that have a strong tendency to move to a higher position, might be expected to behave differently though.

Even though direct objects are all generated in the same position, some objects scramble to a higher position in Dutch, leading to various positions with respect to a sentential adverb (cf. Hendriks et al. (2010) and references cited therein).

(33) a. We hebben eerst [de kat] gevoerd. (Hendriks et al. 2010:45)
    we have first the cat fed
b. We hebben [de kat] eerst gevoerd.
    we have the cat first fed
    'First, we fed the cat.'

---

[25] Cinque argues that the present tense does not correspond to a functional head in the clausal structure, but results compositionally when the time points of TPanterior, TPpast and TPfuture coincide (Cinque 1999:88). As the present auxiliary has corresponds to the anterior tense (cf. Cinque 1999:82), in this thesis all present auxiliaries are assumed to be positioned in TPanterior.

While definite objects optionally scramble to a position above the adverb, indefinite objects generally do not have this option.

(34) a. We hebben eerst   [een kat] gevoerd. (Hendriks et al. 2010:46)
         we have   first   a   cat   fed
     b. We hebben [# een kat] eerst gevoerd.
         we have   a   cat first fed
         'First, we fed a cat.'

Pronouns, on the other hand, have a tendency to scramble to a higher position.

(35) a. We hebben eerst   [# hem] gevoerd. (Hendriks et al. 2010:47)
         we have   first   him]   fed
     b. We hebben [hem] eerst   gevoerd.
         we have   him first   fed
         'First, we fed him.'

Similarly, Haegeman (1995) demonstrates that negative DP's also move to a higher position, as illustrated by the examples in (36).

(36) a. …dat Jan boos op   Marie is. - *…dat Jan boos op   niemand is. (Haegeman 1995:179)
          that Jan angry with Marie is   that Jan angry with   nobody is
     b. # …dat Jan op   Marie boos is. - …dat Jan op   niemand boos   is.
          that Jan with Marie angry is   that Jan on   no one angry   is
          '…that Jan is angry with Marie'   *'…that Jan is angry with no one.'*

Hendriks et al. (2010) demonstrate that scrambling is dependent on a mixture of factors: elements that are new in the discourse generally do not scramble, but there is a requisite for definite objects to scramble. As indefinite objects are generally new in the discourse they will commonly follow the adverb, unless they receive a specific reading. Conversely, as pronouns are definite and usually refer to an antecedent in the previous discourse, they will commonly precede the sentential adverb. Accented pronouns, such as contrastively or deictically used pronouns, conversely, can be new in the discourse and can consequently follow the adverb. The variation in the scrambling of definite objects is also explained by these two competing factors; these elements can be, but do not need to be, new in the discourse.

According to the traditional analysis, scrambling moves an element across adverbs, which are assumed to be adjoined to VP, and adjoins this element higher to the VP (cf. Zwart 1997 and references cited therein). Accordingly, in this approach scrambled objects move to a position above VP, but not above

the auxiliaries. Scrambled objects would hence not behave different from regular objects with respect to verb cluster interruptions. Recall, however, that non-interrupted verb clusters can only be constructed by an independent move of elements, such as objects, to a position preceding the auxiliary, as became evident in section 2.1.1.4. There are analyses to scrambling in which the scrambled object moves to a higher position. Haegeman, for instance, argues that negative DP's move to the specifier of Spec-NegP and regular scrambled objects move to the specifier of a higher functional head (Haegeman 1995:247).[26] In addition, Cinque argues that there are a number of DP-related functional positions interspersed between the adverbs, where scrambled objects can move to (Cinque 1999).

To conclude, in a syntactic approach to verb cluster interruptions, elements of the same syntactic category that are base-generated in the same structural position within the VP are expected to be just as acceptable within a verb cluster in a particular language. Scrambling of this element might affect its acceptability in a verb cluster.

2.2 A FUNCTIONAL APPROACH

The fact that elements can occur in their base-generated position within a verb cluster could have a functional, rather than a syntactic, ground. A preference of performance that has been dubbed *minimize domains* (Hawkins 2003, 2004) could potentially explain variation in verb cluster interruptions.

> The human processor prefers to minimize the connected sequences of linguistic forms and their conventionally associated syntactic and semantic properties in which relations of combination and/or dependency are processed. The degree of this preference will be proportional to the number of relations whose domains can be minimized in competing sequences or structures, and to the extent of the minimization difference in each domain.
>
> (Hawkins 2003:123)

This principle entails that when an item α assigns syntactic or semantic properties to another item β, the efficiency and complexity of processing is immediately affected by the distance between α and β. There is thus a processing preference to have interrelated items occurring within the smallest possible domain.[27]

Hawkins (1994, 2003, 2004) argues that there is a clear link between grammar and performance. According to him, syntactic structures that are preferred in performance will be conventionalized in

---

[26] For more on scrambling, the reader is referred to Haider (2006).

[27] The definition of *domain* will be discussed in the next section.

human languages. He suggests that, as the distance between interrelated items affects the efficiency and complexity of a sentence, surface structures in which interrelated elements are adjacent to each other will often be conventionalized in languages.

Theoretically, the principle of minimize domains could be active in verb cluster formations. In sentences containing a verb cluster, there are two interrelated items; the main verb is selected by the auxiliary[28] and the object is assigned a thematic role by the main verb, as illustrated in (37). Following Hawkins, both the modal verb and the definite object in these sentences prefer to be in a minimal domain with the verb. This entails that there are two conflicting structures available.

(37) a. …dat Jan moet [de auto] maken.
      that Jan must the car make

   b. …dat Jan [de auto] moet maken.
      that Jan the car must make
     '…that Jan must fix the car.'

Linguistic variation could accordingly be due to the option to select between multiple available structures. This idea is in line with Hawkins' hypothesis that grammatical variation arises when processing preferences are in competition with each other (Hawkins 2004). Notice that in languages with an SVO surface structure, where optionality in ordering does not arise, both processing preferences can be fulfilled at once, as in (38).

(38) …that Jan must fix [the car].

If verb cluster constructions were solely constructed according to functional principles, we would expect that the internal syntactic structure of intervening elements does not affect verb cluster formation, nor would the structural position of the intervening element be predicted to play a role. Different types of modals, for instance, have equivalent selectional requirements connecting them to the main verb and are therefore predicted to have equivalent processing requirements to be close to the main verb. If, however, processing interacts with syntactic structure, the amount of syntactic structure elements are associated with, as well as their syntactic position, could affect their acceptability in a verb cluster.

---

[28] As discussed in section 2.1.1.4 auxiliaries and modals are argued to select eventive predicates, such as the lexical verb *maken* in sentence (37) (cf. Barbiers 2008).

2.3 INTERACTION EFFECTS

According to Hawkins, a minimal domain consists of the smallest connected sequence of terminal elements and their associated syntactic and semantic properties at surface structure (Hawkins 2004:23). He states that complexity increases with the number of linguistic forms and the number of conventionally associated (syntactic and semantic) properties that are assigned to them when constructing syntactic and semantic representations for sentences. If verb cluster interruptions are the result of processing requirements that interact with the syntactic structure of the clause, the processing requirement of elements to be close to the main verb are hypothesized to be dependent on their syntactic structure as well as their structural position. This leads to the following predictions.

(i)   As the preference of performance requires elements that have a selectional relationship of some type to be close to each other at the surface structure, elements that are base-generated syntactically close to the main verb are predicted to have a stronger preference to be adjacent to the main verb in linear order. This prediction is discussed in section 2.3.1.

(ii)   Following Miller & Chomsky (1963), Hawkins (2004) argues that terminal elements that have a higher amount of syntactic structure associated with them require more linguistic properties to be processed and are hence more complex. The internal structure of intervening elements is hence predicted to affect their ability to occur in a verb cluster. This prediction is discussed in section 2.3.2.

2.3.1 PROCESSING & SYNTACTIC POSITION

If elements that are generated closer to the verb have a stronger preference to be adjacent to the main verb in linear order, lower elements are hypothesized to be more acceptable in verb clusters than higher elements. In section 2.1.2, the syntactic position of adverbs was discussed. As various adverbs are assumed by Cinque (1999, 2006) to occupy different positions in the syntactic structure, differences in their ability to occur in a verb cluster are expected to be observed.

This prediction also applies to different types of prepositional phrases. Cinque (2006) argues that prepositional phrases are positioned in the lower portion of the clause. He states that different types of prepositional phrases are merged in a strict order among each other, as illustrated in (39).

(39) [temporal PP's [locative PP's [manner PP's [complement PP's [VP]]]]] (Cinque 2006:154)

Following the hypothesis that elements base-generated in a lower position have a stronger preference to be adjacent to the verb, VP-internal prepositional phrases are expected to be more acceptable in verb

clusters than higher prepositional phrases. Similarly, VP-internal elements, such as depictive adjuncts, are considered to be generally acceptable in the verb cluster. Furthermore, we expect to find differences between elements generated in different structural positions, such as subjects and objects, and subject-oriented depictives and object-oriented depictives. Subject-oriented depictives are assumed to be positioned in a higher position than object-oriented depictives, the latter are hence expected to be more acceptable in a verb cluster. The structural difference between subject- and object-oriented depictives, following Larson (1989), is represented in (40).

(40) a. Subject-oriented depictive: b. Object-oriented depictive:
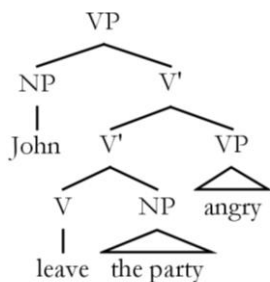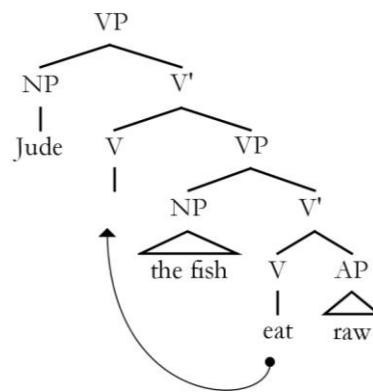
(Larson 1989:13)

Support for these configurations in Dutch comes from the constituency tests in (41) (Sjef Barbiers, personal comment).[29]

(41) a. Jan verlaat het feest boos.
          Jan leaves the party angry
     a'* [boos verlaten] doet Jan het feest niet [boos verlaten].
          angry leave   does Jan the party not angry leave
     a" [boos het feest verlaten] doet Jan niet [boos het feest verlaten].
          angry the party leave   does Jan not angry the party leave
     b. Jan eet de vis rauw.
          Jan eats the fish raw
     b' [rauw eten] doet Jan de vis   niet [rauw eten].
          raw   eat   does Jan the fish not raw   eat
     b" [de vis rauw eten] doet Jan niet [de vis rauw eten].
          the fsh raw   eat   does Jan not the fsh raw   eat

---

[29] Zwart argues that fronting to the first position of the clause is a strong constituency test in Dutch, as the finite verb obligatorily occupies the second position in this language (Zwart 2011:21).

2.3.2 PROCESSING & INTERNAL SYNTACTIC STRUCTURE

Following Hawkins (2003, 2004), the auxiliary and the interrupting element in verb cluster constructions both prefer to be in a minimal domain with the verb; additional syntactic structure enlarges the minimal domain and hence increase the complexity of the sentence. The amount of internal syntactic structure of intervening elements is thus hypothesized to affect their ability to occur in a verb cluster. Various potentially domain-enlarging elements have been included in this investigation to discover whether the amount of syntactic, phonological or morphological material intervening between two elements affects their acceptability in a verb cluster.

Furthermore, this study includes different types of direct objects, with conceivably different internal syntactic structures, namely: bare nouns, (in)definite objects, pronouns and proper names. However, even though these elements seem to be structurally different, all argumental nouns have been argued to be full DP's (Szabolcsi 1987, Abney 1987, Stowell 1989, 1991, among others). According to Longobardi (1994, 1996), bare nouns include an empty D head and, as a result, need to be lexically governed (cf. Chomsky 1981). This explains the contrast in (42).

(42) a.* Acqua viene giù   dalle colline. (Italian, Longobardi 1994:616)
           water comes down from hills
           'Water comes down from the hills.'
      b. Viene giù   acqua dalle colline.
           comes down water from hills

Longobardi argues that the empty D head is existential and can therefore not occur with singular countable head nouns, thus accounting for the ungrammaticality of (43)a.[30] Notice that when countable head nouns occur in non-argumental positions, and thus do not require an empty D head, are well-formed, as in (43)b.

---

[30] Longobardi states that singular nouns can receive a count or mass interpretation, depending on the determiner. Consequently, a singular non-mass interpretation of constituents such as *a girl* would follow from the determiner. According to him, empty determiners always select a mass interpretation of the singular head noun. He suggests that this might be the result of the kind-referring nature of nouns (Longobardi 1994:633-634). Consequently, sentence (43)a is assumed to be illformed because a mass interpretation of the noun is not available.

(43) a.* Ho incontrato grande amico di Maria ieri.   (Longobardi 1994:612)
     have met   great friend of Maria yesterday
     'I met a great friend of Maria yesterday.'
  b. Tenente, eseque l' ordine!
      lieutenant, perform the command
      'Lieutenant, execute the command!'

The fact that the empty D head is existential can account for the contrast in (44); *trovato* forces an existential interpretation of the object, *amo* forces a generic interpretation.

(44) Ho trovato/*Amo buon vino e arance fresche. (Longobardi 1994:612)
     have found   love good ine and oranges fresh
     'I found/love good wine and fresh oranges.'

As proper names and generics are also argumental, they inevitably consist of a full DP. However, as these constituents do not receive an existential interpretation, and do not have to be lexically governed – as illustrated in (45)a – they cannot possibly include an empty D head. Longobardi accounts for these facts by assuming that proper names move from N^0 to D^0. Sentence (45)a is hence tranformationally related to the equally well-formed sentence in (45)b.

(45) a. Gianni mi ha telefonato. (Longobardi 1994:622)
         Gianni me has phoned
         'Gianni called up.'
  b. Il Gianni mi ha telefonato.
      the Gianni me has phoned

Support for a movement of the proper name to D^0 comes from the distributional properties illustrated in (46); when the article is not present, the adjective *mio* has to follow the proper name.

(46) a. Ill mio Gianni ha finalmente telefonato. (Longobardi 1994:623)
         the my Gianni has finally   phoned
         'My Gianni finally called up.'
  b.* Mio   Gianni ha finalmente telefonato.
      my   Gianni has finally   phoned
  c. Gianni mio   ha finalmente telefonato.
      Gianni my   has finally   phoned

Longobardi observes further that where post-nominal possessives as in (47) are normally strongly contrastive in Italian, the interpretation of *mio* in (46)c does not have to receive this interpretation, indicating that *mio* occupies the same structural position as in (46)a.

(47) Ill Gianni mio ha finalmente telefonato. (Longobardi 1994:623)
  the Gianni my has finally   phoned
  'MY Gianni finally called up.'

Longobardi further states that pronouns generally occupy D^0 in both Germanic and Romance languages, explaining their position preceding the adjective in (48). According to him, these pronouns may even be base-generated in D^0, hence explaining why they do not alternate with the sentences in (49).

(48) a. Noi ricchi siamo diventando ancora più ricchi. (Longobardi 1994:635)
      we rich are   becoming even more rich
  b. We rich are becoming even richer.
(49) a. * I ricchi noi…
  b. * The rich we…

The immediate question that this analysis raises is why pronouns obligatorily occupy D^0, proper names optionally raise to D^0 and common nouns cannot raise to D^0. Longobardi stipulates that this might follow from a requirement of kind-referring nouns, such as common nouns, to head the N projection at surface structure. Pronouns cannot refer to kinds and hence do not occupy N^0. Proper names can optionally occupy N^0, as they can refer to kinds in marked cases, as in (50).

(50) Marys are usually nice girls, according to my experience. (Longobardi 1994:636)

Different from Romance languages, in Germanic languages, such as English, proper names can occur without a determiner in a position following the adjective.

(51) I love sweet France. (Longobardi 1994:630)

Furthermore, common nouns in English do not have to be lexically governed, as illustrated in (52)a, and can receive a generic as well as an existential reading, as illustrated in (52)b.

(52) a. Beavers build dams. (Longobardi 1994:630)
  b. I found/love good wine and fresh oranges. (Longobardi 1994:631)

This difference indicates the lack of an empty D head in this language. However, according to Longobardi, arguments must necessarily be DP's. He argues that in Western Romance languages proper names and pronouns move from N to D in overt syntax, whereas in Germanic languages this takes place at LF. As the noun raises covertly, this explains why they cannot precede the adjective in overt syntax.

Longobordi stipulates that, as the requirement for kind-referring nouns to head the N projection is active at surface structure, common nouns in English can raise unproblematically to D at LF. This accounts for their acceptability in positions where they are not lexically governed as well as the fact that they do not have to receive an existential interpretation in this language.[31]

The beauty of an analysis in which argumental nouns are assumed to be full DP's, is that it provides a uniform theory for the structure of different syntactic categories (cf. Abney 1987). Evidence for this analysis comes mainly from the fact that nouns in general and singular count nouns in particular, require a preceding determiner. Stowell suggests that the requirement of a D projection might result from the referential status of the D head (Stowell 1991:46).

Chierchia (1998), however, argues that argumental nouns do not always have to be full DP's. He states that languages vary in what NP's can denote. He agrees with Longobardi in that NP's in Romance are predicational and cannot function as arguments unless a D head is projected, however, he states that NP's are actually argumental in languages such as Chinese and can function as predicates as well as arguments in Germanic languages. If NP's in Germanic languages are assumed capable to function as arguments, the distinct behavior of bare nouns in these languages does not have to be assumed to follow from a covert movement of the noun to D^0 in these languages. Rather one could argue that the empty D head is lacking in these languages and that bare nouns merely consist of an NP. If bare nouns are assumed to have less syntactic structure than for instance proper names, they are hypothesized to have less impact on the domain between the auxiliary and the main verb, and are hence expected to be more acceptable in a verb cluster.

---

[31] Longobardi further argues that cross-linguistic differences with languages such as Romanian and Scandinavian, where common nouns also have the option to raise to D, as illustrated in (iii), arise by the possibility of determiners in these languages to incorporate into the noun (Longobardi 1994:640).

(iii) a. Hans   bøker om   syntaks.
          his   books about syntax
       b. Bøkene   hans om   syntaks.
          books.the his   about syntax

3. METHODOLOGY

3.1 GOALS

The purpose of the investigation was (i) to discover the properties of verb cluster interruptions, (ii) to unravel the factors that play a role in the formation of the construction, and (iii) to provide an explanation for the observed variation.

The first part of the research consisted of a questionnaire that was aimed at investigating the precise extent of verb cluster interruptions; namely the dialects that allow verb cluster interruptions, the types of elements that can occur in a verb cluster, and the variables that play a role in the ability of these elements to occur in a verb cluster. This investigation led to a hierarchy of elements that can occur in a verb cluster.

The second part of the research aimed to investigate the linguistic reality of this hierarchy. As it is argued to follow from general principles of cognition, it is expected to also be active in Standard Dutch, a language in which verb cluster interruptions are exceptional. Barbiers & Van Oostendorp (2013) state that language users that only allow one or two types of elements within a verb cluster nevertheless judge the occurrences of the other elements according to the same hierarchy. This means that the attested patterns are expected to correspond to gradual acceptability judgments of speakers of Standard Dutch.

3.2 DESIGN

The questionnaire was conducted orally and in two rounds. The first round consisted of 293 test sentences. The answers to this questionnaire led to a number of further questions, therefore, a second round was conducted, which consisted of a telephonic interview and included another 38 sentences. The full list of test items can be found in appendices II and III. In addition to speakers of Flemish dialects, a group of speakers of Standard Dutch was asked to judge the acceptability of the items in their language.

Each oral interview began with a practice question. For every test item, the interviewer read out a sentence with neutral intonation, after which the informant was asked to judge if this sentence could be used in their dialects. To check the judgments, the informants were also asked to translate the sentence into their dialect.

One factor that could have negatively affected the outcome of the investigation is known as *accommodation,* which is a phenomenon that speakers of a language tend to adjust their language to that of their speech partner. For reasons of time, the interviewer who conducted the research was not a speaker of the dialect under investigation, but a speaker of Standard Dutch. There is hence always a possibility that the interviewer has not noticed a dialect speaker switched to a regional variant of his/her language.

Since many instances of verb cluster interruption are not allowed in Standard Dutch, conceivably more instances of verb cluster interruptions might have been observed if a different research method had been chosen.

The second part of the research consisted of a comparative judgment task in which speakers of Standard Dutch were asked to order a number of sentences containing verb cluster interruptions by different types of elements, most of these sentences are ill-formed in Standard Dutch. The informants were told that the sentences did not receive any special emphasis or focus. They could only pick one order. The comparative judgment task can be found in appendix IV.

3.3 MATERIAL

To discover the extent of possible verb cluster interruptions, a number of types of non-verbal elements that can hypothetically occur within a verb cluster were tested. These items were all tested with different types of auxiliaries. In addition, a number of other possibly relevant factors were tested, such as changes in complexities, acceptability of negative DP's, different types of prepositional phrases, different types of pronouns and scope effects. This led to a total number of 293 test items, which were offered in a randomized order in five different versions. The test sentences were all constructed according to the format in (53).

(53) a. I   V   that Jan (DP$_{obj}$) X   V$_{mod/aux}$ V$_{main}$[32]
      a' Ik vind dat Jan Marie   op   moet   bellen.
          I   find that Jan Marie   up   must   call
      b. I   V   that Jan (DP$_{obj}$) V$_{mod/aux}$ X   V$_{main}$
      b' Ik vind dat Jan Marie   moet   op   bellen.
          I   find that Jan Marie   must   up   call
          'I think that Jan must phone Marie.'

As discussed above, the investigation revealed a hierarchy of elements that can occur in a verb cluster. Verb cluster interruptions by nine of the main elements of this hierarchy were then presented to speakers of Standard Dutch, namely: adverbs, complex indefinite subjects, prepositional phrases, definite objects, bare plural objects, indefinite optional objects, indefinite obligatory objects, bare singular object, and resultative phrases. Additionally, the informants were asked to rank verb cluster interruptions by different types of adverbs.

---

[32] For reasons of time and complexity, I have limited this survey to two-partite verb clusters. However, the position between two auxiliaries/modal verbs in a three-partite verb cluster is also relevant as it involves an additional landing site for the intervening element. Further investigation is therefore required.

3.4 INFORMANTS

The questionnaire was conducted with forty dialect speakers from four different Flemish provinces, as well as ten speakers of Standard Dutch. As the Meertens Institute was kind enough to share their database with me, a number of Flemish 28 informants were recruited who had participated in the study by Barbiers et al. (2008). These informants had to meet the following criteria: they had to speak the dialect of their home city; they and their parents had to be born and raised in that city; they had to have lived in their home city until they were eighteen; they could never have been absent from their home city longer than 7 years; they had to be aged between 55 and 70 years; they could not be highly educated; and finally, they had to be an active user of the dialect in at least one social domain.

Other dialect speakers were recruited by contacting town halls, retirement homes and through contacts. As it was difficult to find enough informants in a limited amount of time, the criteria were loosened for these additional informants. This could have affected the results of the investigation negatively, as they were more likely to be accustomed to the standard language, which contains less verb cluster interruptions. Appendix 1 contains the information of the informants.

The comparative judgment task was sent online to the Meertens Panel, which is a group of respondents from the Meertens Instituut who are all at least 16 years old and live across the entire Dutch language area.[33] A number of 1371 people participated in this research. The results of one participant (#928) have been excluded from the investigation, because of a mistake in the form.

3.5 STATISTICAL ANALYSES

The investigation tested the acceptability of verb cluster interruptions by a number of different types of elements. No outliers were found. A Pearson's chi-square test was performed to discover whether the acceptability of a verb cluster interruption depends on the type of element that interrupts the cluster. An alpha level of .05 was used to determine the significance of the observed differences. In cases where multiple groups were compared to each other, a Bonferroni correction was applied.

Furthermore, Pearson's correlational test was performed to measure the effect of the type of element on its acceptability in a verb cluster. An effect size (r) of .1, for instance, indicates that 1% of the variance is explained by the effect and is thus a small effect. An effect size of .3 is a medium effect, in which case 9% of the variance is explained by this effect, and an effect size of .5 is a large effect, indicating that the effect accounts for 25% of the variance (Cohen 1988,1992, as cited by Field 2005).

---

[33] For more information see www.meertens.knaw.nl/meertenspanel.

The final analysis aimed to discover if in the comparative judgment task the type of interruption determines the selected scale for the sentence. Dolan (1994) investigated the efficacy of factor analyses on variables with different numbers of response categories. He argues that ordered categorical items with seven categories can be considered continuous. As the comparative judgment task consisted of respectively nine and six categories, I considered the data continuous and performed a univariate general linear model on the data. The effect size (η^2) was measured to determine what proportion of the variance in the ranking could be explained by the sentence. Additionally, a Post hoc Scheffé test was performed to determine which group of sentences was significantly different.

4. RESULTS

4.1 WHAT ARE THE PROPERTIES OF VERB CLUSTER INTERRUPTION?

As the following table indicates, the results of the investigation indicate that verb cluster interruptions can occur with different types of auxiliaries.

verb type	example sentence	percentage accepted
epistemic modal	Ik weet dat Jan **kan** brood eten.[34] I know that Jan can bread eat *'I know that Jan can eat bread.'*	25.0
past auxiliary	Ik wist dat Jan **had** brood ge-bakken. I knew that Jan had bread PRE-bake *'I knew that Jan had baked bread.'*	51.3
present auxiliary	Ik weet dat Jan **heeft** brood ge-bakken. I know that Jan has bread PRE-bake *'I know that Jan has baked bread.'*	56.4
future auxiliary	Ik hoop dat Jan **zal** brood bakken. I hope that Jan shall bread bake *'I know that Jan shall bake bread.'*	37.5
aspectual	Ik hoop dat Jan **blijft** brood bakken. I hope that Jan keeps bread bake *'I hope that Jan keeps baking bread.'*	55.0
modal of obligation	Ik vind dat Jan **moet** brood eten. I find that Jan must bread eat *'I think that Jan must eat bread.'*	47.5

Table 4: verb cluster interruptions with different auxiliaries[35]

Additionally, different types of elements can interrupt a verb cluster. Table 5 lists a number of these elements.[36]

---

[34] As the investigation included 40 different Flemish dialects, the example sentences in this thesis have been normalized to standard Dutch.

[35] The apparent differences between the auxiliaries will be discussed further in section 4.2.1.1.

[36] The results of this investigation clearly differ from the results from Barbiers et al. (2008) as discussed in section 1.2. The main difference is that fewer verb cluster interruptions were accepted. This is most likely due to accommodation effects (cf. section 3.2). Another observed difference is the low acceptability of adverbs, specifically the adverb 'vroeg' *early,* in the verb cluster – a result I return to in section 4.2.1.1. Barbiers et al. found this element to be generally acceptable in a verb cluster. At this point I have no explanation for this difference.

type of element	example sentence	percentage accepted
adpositional particles	Ik vind dat Jan de foto moet **weg** gooien. I find that Jan the photo must away throw *'I think that Jan must throw out the photo.'*	95.2
adverbial particles	Ik vind dat Jan Marie moet **op** bellen. I find that Jan Marie must up call *'I think that Jan must phone Marie.'*	92.5
predicate adjectives	Ik vind dat Jan moet **blij** zijn. I find that Jan must happy be *I think that Jan must be happy.'*	55.0
bare singular objects	Ik vind dat Jan moet **brood** eten. I find that Jan must bread eat *'I think that Jan must eat bread.'*	47.5
depictives (oriented at object)	Ik vind dat Jan de soep moet **koud** eten. I find that Jan the soup must cold eat *'I think that Jan must eat the soup cold.'*	45.0
bare plural objects	Ik vind dat Jan moet **taarten** bakken. I find that Jan must cakes bake *I think that Jan must bake cakes.*	45.7
resultatives	Ik vind dat Jan de auto moet **rood** verven. I find that Jan the car must red paint *'I think that Jan must paint the car red.*	38.7
depictives (oriented at subject)	Ik vind dat Jan moet **naakt** zwemmen. I find that Jan must naked swim *I think that Jan must swim naked.'*	36.4
VP-internal subjects	Ik vind dat er moet **een nieuwe man** komen. I find that there must a new man come *'I think that a new man must come.'*	24.3
indefinite objects	Ik vind dat Jan moet **een schuur** bouwen. I find that Jan must a barn built *I think that Jan must built a barn.*	21.6
prepositional phrases	Ik vind dat Jan moet **op Marie** wachten I find that Jan must on Marie wait *I think that Jan must wait for Marie'*	19.4
temporal adverbs	Ik vind dat Jan moet **vroeg** gaan. I find that Jan must early go *I think that Jan must go early.'*	7.5
definite objects	Ik vind dat Jan moet **de auto** verkopen. I find that Jan must the car sell *I think that Jan must sell the car.'*	5.0

Table 5: verb cluster interruptions by different types of elements

The verb cluster interruptions have commonly been accepted across the Flemish dialects, as is illustrated in Map 1, which represent the locations where a certain element is accepted in a verb cluster.[37,38,39]

---

[37] The maps used in this thesis are all adapted from a base map extracted from the Meertens Institute's website: http://www.meertens.knaw.nl/sand/zoeken/kaart/frames.php.

Verbal breakups
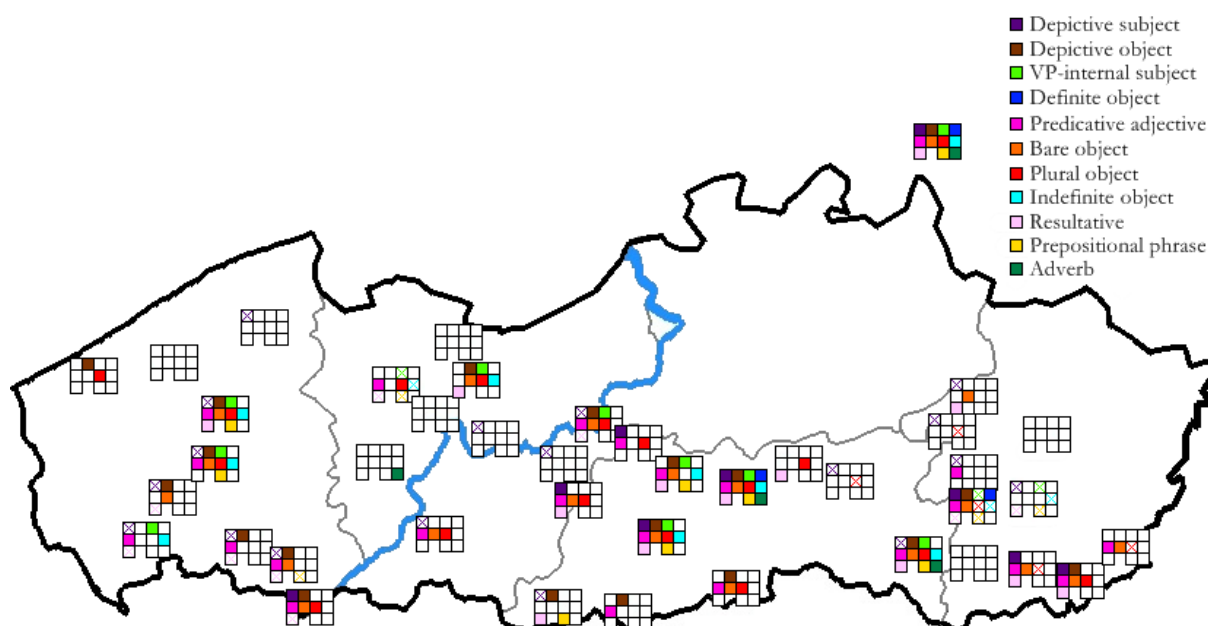
Map 1: verb cluster interruptions with the modal of obligation

Surprisingly, this map demonstrates that verb cluster interruptions are not restricted to the dialects in West-Flanders, but occur most commonly in Flemish Brabant. This becomes even more apparent when comparing verb cluster interruptions across the verb types; Table 6 demonstrates that verb cluster interruptions are more common in dialects spoken in Flemish Brabant than in West-Flanders ($\chi^2(1)$=18.3, p<0.001, r=.1).

province	mean	standard deviation
West-Flanders	31.2	46.4
East-Flanders	28.4	45.1
Flemish Brabant	43.5	49.6
Flemish Limburg	29.1	45.5

Table 6: accepted verb cluster interruptions per region

When closer investigating the total of accepted elements by speakers of Flemish dialects, a clear pattern comes about, as illustrated in Table 7.

---

[38] A cross through a field in the map indicates that the acceptability of the construction was inconclusive. When a dialect did not distinguish between a singular and plural form of a test item, for instance, the acceptability of verb cluster interuptions by the plural object were excluded from the investigation. Furthermore, some items have not been investigated in all dialects, as three dialect speakers did not participate in the second part of the investigation.

[39] Unless mentioned otherwise, the results in this section are based on the answers to the sentences with the modal of obligation, as not all elements have been tested with all types of auxiliaries.

group	type of element	accepted by number of speakers	percentage accepted
group 1	Adpositional particle	20/21	95.2
	Adverbial particle	37/40	92.5
group 2	Predicate adjective	22/40	55.0
	Bare singular object	19/40	47.5
	Depictive (oriented at object)	18/40	45.0
	Bare plural object	16/36	44.4
	Resultative	12/31	38.7
	Depictive (oriented at subject)	8/22	36.4
group 3	VP-internal subject	9/37	24.3
	Indefinite object	8/37	21.6
	Prepositional phrase	7/36	19.4
group 4	Temporal adverb	3/40	7.5
	Definite object	2/40	5.0

Table 7: verb cluster interruptions grouped per word type, accepted by speakers of Flemish dialects

Particles are most common in the verb cluster, followed by a group of elements that, importantly, all consist of single words. Temporal adverbs and definite objects are the least acceptable in verb clusters. These differences become especially clear in Table 8.

group	mean percentage	standard deviation
group 1: particles	93.4	25.0
group 2: syntactically simplex elements	45.5	49.9
group 3: prepositional/indefinite objects; internal subjects	21.8	41.5
group 4: definite objects; adverbs	6.3	24.4

Table 8: accepted verb cluster interruptions grouped per type of element[40]

Based on this, the following hierarchy of verb cluster interruptions can be constructed.

(54) Verb Cluster Interruption Hierarchy *second version*
       Particles **>** syntactically simplex elements **>** prepositional/indefinite objects; internal subjects **>** definite objects; adverbs

When comparing the different groups, a significant association between the group and the acceptability of the verb cluster interruption was observed. In fact, the differences between all groups are significant.[41]

---

[40] As can be viewed in Table 7, the standard deviations of the data are very high, indicating that there is much variance among the informants.

Even though there seems to be much variation between the items in group 2, none of the differences are significant.[42]

The results further demonstrate that speakers of Standard Dutch generally disallow elements consisting of more than one head to interrupt a verb cluster. Table 9 demonstrates the results of the main elements.

group	type of element	accepted by number of speakers
group 1	Adpositional particle	10/10
	Adverbial particle	10/10
group 2	Predicate adjective	1/10
	Bare singular object	1/10
	Depictive (oriented at object)	0/10
	Bare plural object	1/10
	Resultative	3/10
	Depictive (oriented at subject)	2/10
group 3	Subject	0/10
	Indefinite object	0/10
	Prepositional phrase	0/10
group 4	Temporal adverb	1/10
	Definite object	0/10

Table 9: verb cluster interruptions grouped per word type, accepted by speakers of Standard Dutch

These results clearly reveal a difference with Flemish dialects; verb cluster interruptions are generally rare, and words consisting of more than a single element are completely disallowed in Standard Dutch. This seems to indicate that the Verb Cluster Hierarchy is cut off at a different position in this language. The results from Standard Dutch will be discussed further in section 4.3.2.

4.2 WHICH FACTORS PLAY A ROLE IN VERB CLUSTER (INTERRUPTION) FORMATIONS?

The results in Table 7 indicate that the Verb Cluster Interruption Hierarchy cannot be accounted for by a purely syntactic theory or by a purely functional theory, as the differences between the groups cannot be explained by either approach. This becomes especially clear when examining the differences between various types of direct objects. A syntactic approach would not predict a distinction in verb cluster

---

[41] Difference group 1 & 2: $\chi^2(1)=43.8$, p<.001, $r=-.4$; difference group 2 & 3: $\chi^2(1)=17.5$, p<.001, $r=-.2$; difference group 3 & 4: $\chi^2(1)=8.7$, p<.01, $r=-.2$. Note that after applying the Bonferroni correction was applied, an alpha level of .016 was used to determine the significance of these differences.

[42] The difference between predicate adjectives and depictive subjects is not significant ($\chi^2(1)=1.9$, p=.16, $r=-.2$).

interruptions by different elements of the same syntactic category that are base-generated in the same structural position within the VP. However, the results clearly indicate that speakers of Flemish dialects find bare singular nouns more acceptable in a verb cluster than indefinite objects ($\chi^2(1)$=5.7, p<.025, r=-.3). This issue is discussed further in section 4.2.2.

The difference between different types of elements can also not be explained by processing. As discussed, similar types of elements have equivalent selectional requirements connecting them to the main verb and are therefore predicted to have equivalent processing requirements to be close to the main verb.

In the following sections, it will become evident that the Verb Cluster Interruption Hierarchy can be refined. It will be demonstrated that it follows directly from syntactic principles interacting with preferences of performance in two ways:

(i)   Elements that are base-generated syntactically close to the main verb have a stronger processing preference to be adjacent to the main verb in linear order.

(ii) Elements that have a higher amount of syntactic structure associated with them require more linguistic properties to be processed simultaneously and are hence less acceptable in a verb cluster.

4.2.1 PROCESSING & SYNTACTIC POSITION

In this section, it will be demonstrated that elements that are generated near the main verb have a stronger requirement to be adjacent to it in linear order.

4.2.1.1 THE BASE-GENERATED POSITION

As VP-internal material has a strong connection to the main verb, it is expected to be better in a verb cluster than VP-external material. This predicts that objects, for instance, are more acceptable than adverbs in a verb cluster. Table 7 already indicates that this is indeed the case.[43] If lower elements are more acceptable in a verb cluster than higher elements, the acceptability of cluster interruptions can be predicted from the base-generated position of the interrupting element. This idea is explored in this section.

VP-internal material is generally acceptable in a verb cluster. As discussed above, the elements from group 2 did not significantly differ from each other, indicating that there is no difference between, for instance, subject-oriented and object-oriented depictives, despite differences in their structural position ($\chi^2(1)$=.43, p=.51, r=-.1). Assuming that subject-oriented depictives are generated in a higher position

---

[43] With the exception of definite objects, which we will get back to in section 4.2.1.2

than direct objects, this finding indicates that VP-internal elements that are generated in a position closer to the main verb do not have a stronger preference to be close to this main verb than higher VP-internal elements. This conclusion is supported by the lack of a difference in the acceptability of verb cluster interruptions by VP-internal indefinite subjects and indefinite objects ($\chi^2(1)=.08$, p=.78, $r=-.03$); six out of eight informants that allowed subjects in the verb cluster also allowed indefinite objects.

Depictives in verb clusters are expected to be more acceptable than VP-external adverbs. A comparison with higher adverbs indeed indicates that the acceptance of object-oriented depictives in a verb cluster significantly differs from the acceptance of a low adverb, as indicated by Table 10.

	subject-oriented depictive mean 36.4% (standard deviation: 49.2)	object-oriented depictive mean 45.0% (standard deviation: 50.4)
voice adverb mean 10.5% (standard deviation: 31.5)	$\chi^2(1)=3.7$, p=.06, $r=-.3$).	$\chi^2(1)=6.8$, p<.01, $r=-.3$

Table 10: adverbs in verb clusters with an epistemic modal

Interestingly, these results did not indicate a difference between the voice adverb and subject-oriented depictives, indicating that the structural position of these elements does not affect their ability to occur in a verb cluster. However, these results are based on sentences with a modal of obligation. Seeing that there is in fact a medium effect size, this might be the result of the low number of items. When comparing the results of the depictives with all verb types, the difference between subject-oriented depictives and voice adverbs is in fact found to be significant.[44]

	subject-oriented depictive mean 24.8% (standard deviation: 43.4)	object-oriented depictive mean 25.3% (standard deviation: 43.6)
voice adverb mean 6.5% (standard deviation: 24.7)	$\chi^2(1)=16.6$, p<0.001, $r=-.3$	$\chi^2(1)=19.0$, p<.001, $r=-.2$

Table 11: adverbs in all verb clusters

In this view, prepositional phrases are interesting to compare. Cinque (2006) argues that complement and adverbial prepositional phrases are positioned in the lower portion of the clause and are strictly ordered among each other, as in (55).

---

[44] When comparing all results, the differences between subject-oriented and object-oriented depictives and between indefinite subjects and objects remained insignificant, respectively $\chi2(1)=.01$, p=.92, $r=-.01$ and $\chi2(1)=.5$, p=.50, $r=-.03$.

(55) [temporal PP's [locative PP's [manner PP's [complement PP's [VP]]]]]]

As can be seen in Table 12, even though there is a clear trend indicating that the lowest prepositional phrases are more acceptable in a verb cluster than higher prepositional phrases, none of the types of prepositional phrases significantly differ from each other.[45]

PP type	accepted by number of speakers	percentage accepted
temporal	2/37	5.4
locative	2/40	5
manner	3/40	7.5
complement	5/40	12.5
predicative	5/37	13.5

Table 12: prepositional phrases in the verb cluster

The study also included adverbs, which are positioned in the higher portion of the clause, according to Cinque's hierarchy.

(56) [MOODPevaluative helaas *'unfortunately'* [MODPepistemic waarschijnlijk *'probably'* [TP toen *'then'* [MODPalethic noodzakelijk/mogelijk *'necessarily/possibly'* [ASPcontinuative voortdurend *'continually'* [VOICEP goed *'well'* [VP V]]]]]]]]

(Cinque 1999:106)

The adverbs were tested in six different contexts. Table 13 indicates the percentage of sentences with a verb cluster interruption that were accepted by the dialect speakers.

	goed	voortdurend	noodzakelijk /mogelijk	toen	waarschijnlijk	helaas
percentage accepted	6.5	3.2	3.2	1.3	0.9	0.5
standard deviation	24.7	17.5	17.7	11.3	9.7	6.8

Table 13: adverbs in the verb cluster

As becomes evident, adverbs are generally unacceptable within the verb cluster. It seems to be the case that the acceptability level slightly improves as lower adverbs are used; the difference between the highest adverb *helaas* and the lowest adverb *goed* is significant ($\chi^2(1)=11.0$, p<.01*, r*=-.2).

---

[45] The difference between locative and predicational prepositions is for instance $\chi2(1)=1.69$, p=.19, *r*=.2.

According to Cinque (1999), negative phrases can be generated in variable positions on top of any of the adverb-related functional projections below ModP$_{epist}$, and have the possibility to cliticize onto a verb and move to a higher position. Negative phrases are therefore expected to be at least as unacceptable in a verb cluster as adverbs. This prediction is borne out – less than 1% of the sentences with a negative phrase (either *not* or *never*) in a verb cluster were accepted by the dialect speakers.

Following Cinque's hierarchy and the fact that verb cluster interruptions indicate the base-generated position of elements, higher adverbs are predicted only to be able to interrupt a verb cluster with even higher auxiliaries, as demonstrated by the simplified structure in (57).

(57) [MOODPevaluative helaas *'unfortunately'* [MODPepistemic waarschijnlijk *'probably'* [MODPepistemic' kunnen *'can'* [TPpast toen *'then'* [TPpast' hadden *'had'* [TPfuture zullen *'shall'* [MODPalethic noodzakelijk/mogelijk *'necessarily/possibly'* [TPanterior hebben *'have'* [ASPcontinuative voortdurend *'continually'* [ASPPcontinuative' blijven *'remain'* [MODPobligation moeten [VOICEP goed *'well'* [VP V]]]]]]]]]]]]]

However, as Table 14 illustrates, this prediction is not borne out.

	goed	voortdurend	noodzakelijk/mogelijk	toen	waarschijnlijk	helaas
modal of obligation	10.5	7.9	2.8	2.6	0.0	2.8
aspectual	5.3	2.7	2.9	0.0	3.0	0.0
pres auxiliary	4.5	0.0	0.0	2.5	0.0	0.0
future auxiliary	14.3	5.6	7.9	0.0	2.9	0.0
past auxiliary	4.5	0.0	0.0	0.0	0.0	0.0
epistemic modal	0.0	2.7	5.4	2.6	0.0	0.0

Table 14: adverbs in the verb cluster grouped per type of auxiliary

These results indicate that adverbs are not as strictly ordered with respect to verbs as argued by Cinque (1999, 2006). The question that this raises is whether a difference in acceptability occurs when different auxiliary types are used. If one assumes that lower auxiliaries have a closer connection with the main verb than higher verbs, lower auxiliaries would be expected to be less acceptable with a verb cluster interruption. However, even though different verb types have different structural positions, they might be equally connected to the main verb; following Barbiers (2008), different types of modals, for instance, have equivalent selectional requirements that connect them to the main verb. Therefore, higher verbs are predicted to have the same processing requirement to be close to the main verb as lower verbs. Now consider Table 15.

auxiliary type	percentage accepted	standard deviation
modal of obligation	31.7	46.6
aspectual	29.0	45.4
future auxiliary	28.4	45.2
pres auxiliary	13.8	34.6
past auxiliary	12.6	33.2
epistemic modal	24.8	43.2

Table 15: Verb cluster interruptions, grouped per verb type

First, the results of sentences with past and present auxiliaries indicate that these verbs are less acceptable with verb cluster interruptions than other auxiliaries are. This may be due to the fact that these verbs trigger verb raising,[46] which is a process in which the finite verb is positioned in a sentence-final position. As discussed in section 2.1.1.2, verb cluster interruptions only occur in the V1-V2 word order.

The results further seem to indicate that the lower modal allows verb cluster interruptions more often than the high modal, but this difference is not significant ($\chi 2(1)=3.9$, p=0.05[47], $r=-.1$).

Based on the results so far, we can conclude that elements that are generated near the main verb, such as direct objects, have a stronger requirement to be adjacent to it in linear order than elements generated in a higher position, such as adverbs. The results further indicate that Cinque's hierarchy of functional projections is not reflected in the acceptability of elements in a verb cluster, however, this may be due to the general unacceptability of verb cluster interruptions by elements that are generated in a high position. This raises the question of whether scrambling of direct objects affects their acceptability in a verb cluster, this issue is discussed in the following section.

4.2.1.2 SCRAMBLING

As discussed in section 2.1.2, non-accented pronouns obligatorily scramble to a position higher in the syntactic structure and definite objects can optionally scramble to this position. When investigating verb

---

[46] Verb raising is illustrated in (iv)b.

(iv) a. …dat Jan brood heeft   gebakken.
       that Jan bread has   baked
  b. …dat Jan brood gebakken heeft.
      that Jan bread baked   has
  '…that Jan has baked bread.'
Verb raising was applied in 41.6% of all test sentences with a past or a present auxiliary. No difference was observed between verb raising in sentences with a past and a present auxiliary.

[47] Note that, after the Bonferroni correction was applied, an alpha level of .01 was used to determine the significance of these differences.

cluster interruptions, the distinction between these different types of direct objects is reflected in their acceptability for occurrence in a verb cluster, as can be seen in Table 16.

word type	percentage accepted	standard deviation
negative DP	0.0	0.0
regular pronoun[48]	2.5	15.8
definite object	5.0	22.1
contrastive pronoun	12.5	33.6
indefinite object	21.6	41.7

Table 16: direct object in the verb cluster

Indefinite objects indeed significantly differ from unaccented pronouns ($\chi^2(1)=6.8$ $p<0.01$, $r=-.3$) and, as expected, not from contrastive pronouns ($\chi^2(1)=.99$, $p=.32$, $r=1$).[49] This indicates that elements that obligatorily scramble are less acceptable in a verb cluster. Furthermore, the results from definite objects, which optionally scramble, are not significantly different from indefinite objects ($\chi^2(1)=4.7$, $p=.03$[50], $r=-.3$), nor from contrastive pronouns ($\chi^2(1)=1.3$, $p=.25$, $r=-.1$), nor from regular pronouns ($\chi^2(1)=.35$, $p=.56$, $r=.1$).

A complicating factor in the discussion of scrambling effects becomes apparent when true indefinite objects are examined. True indefinite objects are objects that cannot occur with a definite article.

(58) Ik vind dat Jan [een kilometer]/[*de kilometer] moet rennen.
   I find that Jan a   kilometer the kilometer must run
   *'I think that Jan must run a kilometer.'

True indefinite objects pattern with regular indefinite objects with respect to scrambling.

---

[48] Note that other types of non-accented pronouns are judged just as bad in verb clusters.

word type	pronoun	accepted	percentage
weak pronoun	'm	0/39	0
demonstrative pronoun	dat 'that'	1/40	2.5
indefinite pronoun	wat 'something'	2/40	5

Table i: non-accented pronouns in the verb cluster

[49] However, as can be viewed in Table 16, the difference between contrastive pronouns and indefinite objects is higher than may be expected, considering that accented pronouns generally do not scramble. The fact that informants often had trouble accenting the pronoun according to contrastive focus might have affected the number of accepted verb cluster interruptions by this type of pronoun.

[50] Note that, after the Bonferroni correction was applied, an alpha level of .013 was used to determine the significance of these differences.

(59) a. Ik vind dat Jan [* een kilometer] eerst [een kilometer] moet rennen.
     I find that Jan   a   kilometer first a   kilometere must run
     'First, I think that Jan must run a kilometer.'
  b. Ik vind dat Jan [* een schuur] eerst [een schuur] moet bouwen.
     I find that Jan   a   barn   first a   barn   must built
     'First, I think that Jan must built a barn.'

Perhaps unexpectedly though, true indefinite objects are significantly less acceptable in the verb cluster than regular indefinite objects ($\chi^2(1)=6.8$, p<.001, *r*=-.3).[51] This might be explained, however, if we reexamine Hawkins' (2003) hypothesis of minimal domains, which states that elements that are semantically or syntactically closely related, are required to be close the verb. The difference between regular and true indefinite objects might lie in their relation to the verb. Note that the verb *rennen* in sentence (60)a is optionally transitive, where *bouwen* in sentence (60)b obligatorily takes an object.

(60) a. Ik vind dat Jan (een kilometer) moet rennen.
     I find that Jan a   kilometer must run
     'I think that Jan must run (a kilometer).'
  b. Ik vind dat Jan *(een schuur) moet bouwen.
     I find that Jan a   barn   must built
     'I think that Jan must built a barn.'

Theoretically, an optional argument has a less tight connection with the main verb, which diminishes their need to be adjacent to the verb.

We can now safely conclude that scrambled DP's, such as pronouns, are less acceptable within verb clusters than non-scrambled DP's, such as regular indefinite objects. Scrambled DP's are thus less acceptable within verb clusters. This indicates that the requirement of definite DP's to scramble to a higher position is stronger than their requirement to be positioned close to the main verb. Some, maybe even all, syntactic movement operations can thus take precedence over processing requirements. This issue will be discussed further in section 4.3.1.

The fact that scrambling is the factor that blocks the possibility for verb cluster interruptions and not, for instance, a semantic definite feature, is demonstrated by verb cluster interruptions by prepositional phrases. Different types of prepositional phrases are positioned differently in the hierarchical structure, but as illustrated in Table 17, in no position is the acceptability of a prepositional type in a verb cluster dependent on the definiteness of the nominal phrase.

---

[51] Verb cluster interruptions by true indefinite objects have been accepted by 1 out of 40 Flemish informants, where regular indefinite objects have been accepted by 8 out of 37 informants.

PP type	definiteness	sentence	percentage accepted	standard deviation	significance of difference
locative	bare	op school on school	13.5	34.7	$\chi^2(1)$=1.7, p=.19, r=-.2
	definite	in het park in the park	5.0	22.1	
manner	bare	per trein by train	3.5	18.6	$\chi^2(1)$=.51, p<.48, r=-.1
	definite	met de bus with the bus	7.5	26.7	
object	bare	op geld on money	19.4	40.1	$\chi^2(1)$=.69, p=.41, r=-.1
	definite	op Marie on Marie	12.5	33.5	
predicate	bare	op tafel on table	20	40.5	$\chi^2(1)$=.58, p=.45, r=-.1
	definite	op de tafel on the table	13.5	34.7	

Table 17: prepositional phrases in the verb cluster[52]

4.2.1.3 INTERMEDIATE CONCLUSION: PROCESSING & SYNTACTIC POSITION

In this section it became clear that an interaction between processing and syntax leads to variation in the acceptance of different verb cluster interruptions; elements that are base-generated syntactically close to a verb have a stronger preference to be adjacent to the main verb. Some syntactic movement operations prove to be more essential than the processing requirement to be close to the verb.

One issue that needs to be discussed at this point is that the finding that lower elements are generally acceptable in a verb cluster is possibly debunked by the discovery that underlying objects are not expected to occur in a verb cluster; sentence (61)a was rejected by all dialect speakers and sentence (61)b was accepted by only 9 out of 37 informants, which is significantly less than the sentences that included a verb cluster interruption by a bare singular object ($\chi^2(1)$=4.5, p<0.05, r=-.3).

(61) a. Ik zie dat er   wordt   een man geslagen.
       I see that there becomes a   man hit
       'I see that a man is being hit.'
     b. Ik zie dat er   wordt   brood gebakken.
       I see that there becomes bread baked
       'I see that bread being baked.'

---

[52] Prepositional phrases will be discussed further below.

The unacceptability of these sentences might be the result of the distance between the expletive subject and the object. As these items are connected to each other – as illustrated by the sentences in (62) – they are expected to be required to be in a minimal domain with each other.

(62) a. Er   wordt   een man geslagen.
        there becomes a   man hit
     b. Een man wordt   geslagen.
        a   man becomes hit

Future research is needed to test the influence of expletive subjects on verb cluster interruptions.

The fact that the syntactic position of elements, rather than their semantic connection with the verb affects their ability to occur in a verb cluster, is demonstrated by the acceptance of a cognate object in a verb cluster. If the semantic relationship were a factor for verb cluster interruptions, cognate objects are expected to be more acceptable in a verb cluster, as they have a closer semantic connection with the main verb, which is illustrated in (63).

(63) a. Ik doe een dutje – *Ik slaap een dutje.
     b. I take a   nap – *I sleep a   nap.

Even though cognate indefinite objects have a closer semantic relation with the verb than other indefinite objects, the investigation did not find a significant difference between the acceptability of these elements to occur in a verb cluster ($\chi^2(1)=.01$, p=.93, r=-01). Map 2 illustrates that cognate objects and indefinite objects are allowed by roughly the same dialects.
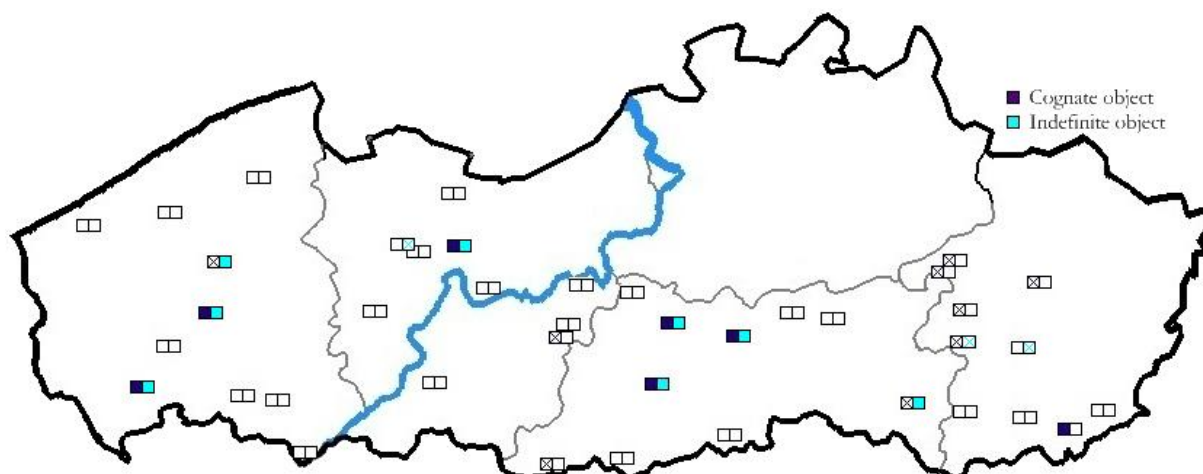
Map 2: cognate object & indefinite objects in the verb cluster

The acceptability of verb cluster interruptions can thus, for a large part, be predicted from the syntactic position of elements. However, a number of observed differences remain to be explained; the difference

between bare objects and full objects and the general acceptance of particles in verb clusters are not explained by their structural position. This will be discussed in the next section.

4.2.2 PROCESSING & SYNTACTIC STRUCTURE

In this section, it will be demonstrated that the internal structure of intervening elements affects the acceptance of a verb cluster interruption, because additional structure enlarges the domain between the auxiliary and the verb.

4.2.2.1 THE MINIMAL DOMAIN

As discussed in section 2.1, in verb cluster interruptions, there is a competition between the auxiliary and another element, which both prefer to be in a minimal domain with the verb. In this section, it will become evident that the results of the investigation strongly indicate that a minimal domain should be defined as a syntactically simplex domain; neither the difference between number of syllables, morphemes, or words significantly influence the acceptability of verb cluster interruptions. Syntactic structure, however, does have a significant influence.

The effects of syntactic structure already become evident when considering particles. These elements, which have been argued to be non-projecting terminal nodes,[53] are more acceptable than any other element. A further indication that internal syntactic structure affects the acceptability of an element in a verb cluster comes from differences between various direct objects. As discussed in section 4.2, bare singular nouns are more acceptable in a verb cluster than indefinite objects ($\chi^2(1)=5.7$, p<.025, $r=-.3$). This could be the result of the number of syllables, as much as the syntactic structure of these elements.

Table 18 indicates that the number of syllables has no influence on the acceptability for an element occurring in a verb cluster.

---

[53] This idea is inter alia supported by the fact that particles cannot have a modifier or a complement (cf.Toivonen 2001 and references cited there).

number of syllables	sentence[54]	accepted	percentage
1	Ik vind dat Jan moet boer worden. I find that Jan must farmer become *'Ik think that Jan must become a farmer.'*	9/36	25.0
more	Ik vind dat Jan moet chocola kopen. I find that Jan must chocolate buy *'Ik think that Jan must buy chocolate.'*	9/36	25.0
1	Ik vind dat Jan moet een pen kopen. I find that Jan must a pen buy *'Ik think that Jan must buy a pen.'*	7/37	18.9
more	Ik vind dat Jan moet een thermometer kopen. I find that Jan must a thermometer buy *'Ik think that Jan must buy a thermometer.'*	7/37	18.9
1	Ik vind dat Jan moet Els zoenen. I find that Jan must Els kiss *'Ik think that Jan must kiss Els.'*	4/36	11.1
more	Ik vind dat Jan moet Henriette zoenen. I find that Jan must Henriette kiss *'Ik think that Jan must kiss Henriette.'*	4/36	11.1

Table 18: the number of syllables of the interrupting element

Table 19 indicates that the number of morphemes also does not influence the acceptability for an element in a verb cluster; the small differences are not significant.

---

[54] Unfortunately the test items did not include minimal pairs.

number of morphemes	sentence	accepted	percentage
1	Ik vind dat Jan moet chocola kopen. I find that Jan must chocolate buy *'Ik think that Jan must buy chocolate.'*	9/36	24.3
2	Ik vind dat Marie moet boer-in worden. I find that Marie must farmer-GEN become *'Ik think that Marie must become a farmer.'*	10/36	27.8[55]
1	Ik vind dat Jan moet een pen kopen. I find that Jan must a pen buy *'Ik think that Jan must buy a pen.'*	7/37	18.9
more	Ik vind dat Jan moet een penne-tje kopen. I find that Jan must a pen-dim buy *'Ik think that Jan must buy a little pen.'*	7/37	18.9
1	Ik vind dat Jan moet Henriette zoenen. I find that Jan must Henriette kiss *'Ik think that Jan must kiss Henriette.'*	4/36	11.1
more	Ik vind dat Jan moet een mooi, wit paard kopen. I find that Jan must a beautiful white horse buy *'I think that Jan must buy a beautiful, white horse.'*	4/37	10.8[56]

Table 19: the number of morphemes of the interrupting element

Table 20, finally, demonstrates that even when the number of words remains the same, the acceptability for an element in a verb cluster can decrease. These differences, however, are not significant ($\chi^2(1)=2.18$, p=.14, *r*=.2).

word type	sentence	accepted	percentage
bare noun	Ik vind dat Jan moet boer worden. I find that Jan must farmer become *'Ik think that Jan must become a farmer.'*	9/36	25.0
DP	Ik vind dat Jan moet Els zoenen. I find that Jan must Els kiss *'Ik think that Jan must kiss Els.'*	4/36	11.1
bare noun	Ik vind dat Jan moet chocola kopen. I find that Jan must chocolate buy *'Ik think that Jan must buy chocolate.'*	9/36	25.0
DP	Ik vind dat Jan moet Henriette zoenen. I find that Jan must Henriette kiss *'Ik think that Jan must kiss Henriette.'*	4/36	11.1

Table 20: the syntactic structure of the interrupting element

---

[55] $\chi^2(1)=11.3$, p=.74, *r*=-.04.

[56] $\chi^2(1)=.002$, p=.97, *r*=-.01.

The fact that these differences are not significant might be due to the small number of informants that generally accepted a direct object in a verb cluster. The influence of syntactic structure can further be investigated by examining the groups of small clause predicates. As Table 21 indicates, verb cluster interruption is generally accepted with adjectival predicates. Prepositional predicates, which consist of more syntactic structure, are significantly less acceptable ($\chi^2(1)=10.45$, p<0.01, r=.4).

word type	sentence	percentage accepted	standard deviation
AP predicate	Ik vind dat Jan moet [AP blij] zijn. I find that Jan must happy be *'I think that Jan must be happy.'*	55.0	50.4
PP predicate	Ik vind dat Jan de borden moet [PP op [NP tafel]] zetten. I find that Jan the plates must on table put *'I think that Jan must put the plates on the table.'*	20.0	40.5

Table 21: the syntactic structure of predicates

As syntactic complexity plays a significant role in the acceptability of an element in a verb cluster, making an element more complex should affect its ability to occur in a verb cluster. The fact that definite and indefinite direct objects – which consist of two terminal nodes – are less acceptable in a verb cluster than bare nouns already supports this claim.[57]

When investigating bare nouns more carefully, it turns out that, when modified, as in sentence (64), they are accepted by 15 percent of the informants, which is indeed significantly less than unmodified bare nouns ($\chi^2(1)=9.8$, p<0.01, r=-.4).

(64) Ik vind dat Jan moet [brood [met pinda-kaas]] eten.
I find that Jan must bread with peanut-butter eat
'I think that Jan must eat bread with peanut butter.'

---

[57] A difference was also found between bare and full plural nouns ($\chi^2(1)=7.38$, p<0.01, r=-.3). However, this may for a large part be due to the definiteness of the full plural (cf. section 4.2.1.2).

word type	sentence	percentage accepted	standard deviation
bare plural	Ik vind dat Jan moet taarten bakken. I find that Jan must cakes bake *'I think that Jan must bake cakes.'*	45.7	50.5
full plural	Ik vind dat Jan moet de varkens slachten. I find that Jan must the pigs slaughter *'I think that Jan must slaughter the pigs.'*	16.2	37.4

Table ii: plural nouns in the verb cluster

This raises the question of whether syntactically slightly more complex elements such as indefinite subjects and objects are affected by the addition of an extra terminal node. Therefore, the following sentences have been investigated.

(65) a. Ik vind dat er   moet [een trein] komen.
     I find that there must a   train come
     'I think that a train must come.'
  a'. Ik vind dat er   moet [een [nieuwe man]] komen.
     I find that there must a   new   man come
     'I think that a new man must come.'
  b. Ik vind dat Jan moet [een schuur] bouwen.
     I find that Jan must a   barn   built
     'I think that Jan must built a barn.'
  b. Ik vind dat Jan moet [een [mooi   [wit   paard]]] kopen.
     I find that Jan must a   beautiful white horse   buy
     'I think that Jan must buy a beautiful white horse.'

The results indeed show that items that are syntactically more complex have a lower acceptance rate. However, these results are not significant.

number of terminal nodes	percentage accepted	standard deviation	significance of difference
2: [DP een [NP trein]]	24.3	43.5	$\chi^2(1)=1.06$, p=.30, *r*=-1
3: [DP een [AP nieuwe [NP man]]]	15.0	36.2	
2: [DP een [NP schuur]]	21.6	41.7	$\chi^2(1)=1.6$, p=.20 *r*=-.2
4: [DP een [AP mooi [AP wit [NP paard]]]]	10.8	31.5	

Table 22: the number of terminal nodes of the interrupting element

These results seem to contradict each other; a direct object with the internal structure as in (66)a is significantly worse in a verb cluster than a bare direct object, but a VP-internal subject with the internal structure in (66)b is not significantly less acceptable in a verb cluster than a non-modified VP-internal subject.

(66) a. [NP brood [PP met   [NP pinda-kaas   ]]]
          bread   with   peanut-butter
   b. [DP een   [AP nieuwe [NP man   ]]]
          a   new   man

However, the significant effect of the PP in (66)a can easily be understood when considering its affect on the minimal domain between the elements in the test sentence. As can be viewed in (67), the PP in

(67)a enlarges the domain between both the noun and the verb and the auxiliary and the verb, whereas the AP in (67)b 'only' enlarges the distance between the auxiliary and the verb.

(67) a. …moet [NP brood [PP met   [NP pinda-kaas   ]]] eten.
             must   bread   with   peanut-butter   eat

     b. …moet [DP een   [AP nieuwe [NP man   ]]] komen.
             must   a   new   man   come
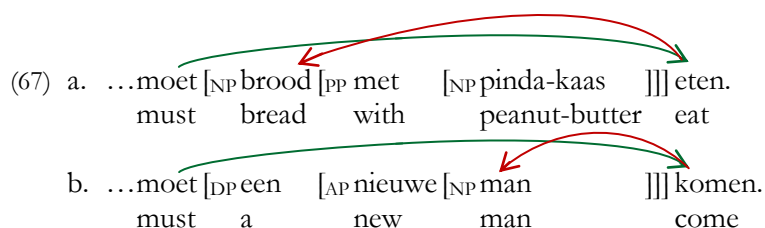
The internal syntactic structure thus affects the acceptability for an element within a verb cluster; when syntactic structure enlarges the distance between two verbs, the acceptability a verb cluster interruption decreases.

4.2.2.2 STRANDED PREPOSITIONS

A possible counterexample to this claim comes from stranded prepositions. As Table 23 indicates, these elements are commonly accepted in the verb cluster.

type of stranded preposition	percentage accepted	standard deviation
locative	77.5	44.3
manner	60.0	49.6
complement	72.5	45.2
predicate	68.4	47.1

Table 23: stranded prepositions in the verb cluster

These results might be striking in light of the hypothesis that syntactically complex elements are generally less acceptable in a verb cluster, seeing that stranded prepositions are commonly assumed syntactically complex, involving a trace of the moved DP (Ross 1986).

(68) Ik hoop dat ik er$_i$ mag [in t$_i$] kijken.
     I   hope that I there may in   look
     'I hope that I may look in there.'

However, Kayne (2000, 2002) argues against this idea and states that prepositions are base-generated above the VP. This entails that *a picture of John* in (69) is not a constituent. According to Kayne, the phrase *admiring a picture of John* is generated as illustrated in (70) (Kayne 2000:315-316).

(69) (Bill was) admiring a picture of John.
(70) a. admiring [John a picture]
     b. of admiring [John a picture]
     b. John of admiring [~~John~~ a picture]]
     c. of [John ~~of~~ [admiring [~~John~~ a picture]]]
     d. [admiring [~~John~~ a picture]] of [John ~~of~~ [admiring [John a picture]~~]~~]

Following this theory, even though the preposition in (68) appears to be stranded, it is not actually generated with a DP in its complement position. This hypothesis is in line with Stowell's (1982) suggestion that P-stranding is allowed only in languages that also have verb-particle constructions.[58]

Kayne' theory entails that 'stranded' prepositions are syntactically simplex items, such as particles. The high acceptability rate of these elements accordingly does not invalidate the hypothesis that syntactically simplex elements are generally more acceptable in a verb cluster than syntactically complex items.

4.2.2.3 INTERMEDIATE CONCLUSION: PROCESSING AND SYNTACTIC STRUCTURE

We can conclude that verb cluster interruptions are affected by the syntactic structure of internal elements. Note that if minimal domains should indeed be defined according to syntactic structure, and not the number of syllables, the observed difference between bare nouns and full DP's is the result of a syntactic difference between these elements. This argues against Longobardi (1994) and in favor of Chierchia (1998) that arguments do not have to be full DP's, but can be bare.

Syntactic architecture thus affects the processing of the sentence. However, we cannot conclude that verb cluster interruptions are solely constructed according to syntactic principles, as this would not predict a difference between elements of the same syntactic category which occupy the same structural position. As discussed above, there is a significant difference between the acceptability of the sentences in (71).

(71) a. Ik vind dat Jan moet brood eten.
        I find that Jan must bread eat
        'I think that Jan must eat bread.'
     b. Ik vind dat Jan moet brood met pinda-kaas   eten.
        I find that Jan must bread with peanut-butter eat
        'I think that Jan must eat bread with peanut butter.'

The direct objects in both these sentences are base-generated in the same position below the modal of obligation and the entire constituents are of the same syntactic category. The difference between these

---

[58] Although Stowell argues that this correlation is due to the fact that the languages that have a word-formation rule in the lexicon which can create a complex verb from a particle and verb, can apply this rule to prepositions as well (Stowell 1982).

sentences can only be explained by the effect that the intervening element has on the minimal domains between the various elements, which affects processing (cf. Hawkins 2003, 2004).

4.2.3 A GRAMMATICAL HIERARCHY

Based on the observed facts in the previous sections, I conclude that the Verb Cluster Interruption Hierarchy consists of the following components.

(72) Verb Cluster Interruption Hierarchy *final version*
     a. syntactically simplex elements > syntactically complex elements
     b. syntactically low elements > syntactically high elements

Following this hierarchy, syntactically simplex elements are more acceptable in a verb cluster than syntactically complex elements, and VP-internal material is more acceptable in a verb cluster than VP-external material. This follows entirely from the processing requirement on elements close to the main verb, to be adjacent to the main verb in linear order. The interaction of processing and syntax thus leads to a scale running from items that are better in a verb cluster to items that are better outside this cluster. This scale is directly represented in the findings of the study.

4.3 WHAT CAN EXPLAIN THE OBSERVED VARIATION IN THE USE OF THE CONSTRUCTION?

There is much variation in the acceptance of verb cluster interruptions amongst speakers of Flemish dialects. Furthermore, verb cluster interruptions are more common in Flemish dialects than in Standard Dutch. This section aims to explain this variation.

4.3.1 INTER-SPEAKER VARIABILITY

Syntactic distance to the main verb was shown to be one of the key factors in an element's preference for occurrence in a verb cluster. The idea that lower elements are generally more acceptable in a verb cluster raises the question of which part of the clause is generally allowed within a verb cluster. The results from depictive adverbs and prepositional phrases seem to indicate that the boundary for verb cluster interruptions seems to lie in the lower part of the VP. The exact syntactic position where elements which do not have a requirement to be close to the main verb are base-generated, is not clear-cut. This is not unexpected, as choices of complexities can differ for each language user, and for every context. Differences between Flemish dialects would accordingly, for a large part, be due to the choices language users make regarding the elements that can occur within a verb cluster before the structure

becomes too complex. Two potential options could explain the variable positions of interrupting elements:

A. All elements always move, but they can optionally be spelled-out in different positions. Syntactically simplex elements that are base-generated close to the main verb can be, and are required to be, spelled-out in their base-generated position.

B. Syntactically simplex elements that are base-generated close to the main verb do not move, but can stay in situ.

The finding that scrambling operations are unaffected by the processing requirement sheds light on this issue. As scrambling affects the interpretation of a direct object, this movement operation necessarily happens before spell-out. There are two logical possibilities that could account for the fact that scrambling operations are not affected by processing requirements. The first possibility is that these operations occur before processing requirements are active. As processing does not affect the spelled-out position of an already scrambled element, this implies that option A does not hold.

The second possibility is that processing requirements are active before scrambling. Processing can then require an element to stay in situ. Syntactic movement operations such as scrambling apply after this requirement is active. Again, processing would not affect the spelled-out position of an element.

This second possibility entails that other syntactic movement operations also happen after processing requirements are met. This implies that DP's such as indefinite subjects move only for processing requirements, otherwise they could never occur within a verb cluster. If movement of these phrases is purely imposed by processing requirements, it enlightens on the lack of an interpretational difference between sentences with uninterrupted verb clusters and sentences with interrupted verb clusters.

Finally, a note needs to be made on the overlap between dialects in which elements can interrupt a verb cluster and dialects in which these elements precede the verb cluster. Often, dialect speakers that accept an element in a verb cluster, as in (73)a, generally also allow the parallel sentence in which the same element preceded the verb cluster, as in (73)b.

(73) a. Ik vind dat Jan moet brood eten.
       I find that Jan must bread eat
     b. Ik vind dat Jan brood moet eten.
       I find that Jan bread must eat
       'I think that Jan must eat bread.'

The immediate question that arises is whether these dialect speakers possess two different grammars, or if their grammar allows two different options. This issue will be discussed further in section 5.

4.3.2 CROSS-LINGUISTIC VARIATION

This thesis has so far explored and explained verb cluster interruptions in Flemish dialects. However, more needs to be said about this phenomenon, or rather, the general unavailability of this phenomenon in northern Dutch dialects.

As the principles in verb cluster interruptions are the result of interactions of general properties of human cognition, syntax and processing, one would expect the Verb Cluster Interruption Hierarchy to have roughly the same effect in different dialects. We have seen that in Flemish dialects, the boundary for verb cluster interruptions is positioned somewhere in the lower portion of the clause. Within that lower portion, there is a degree in the acceptance of elements, following directly from an interaction between processing and syntactic principles. In this section, it will become clear that the Verb Cluster Interruption Hierarchy is also pertinent in northern dialects, but the cut-off point is lower on the hierarchy, because of language change.

Verb cluster interruptions have long been argued to be mainly a property of southern Dutch dialects (Verhasselt 1961, Koelmans 1965, Haeseryn 1990). Verhasselt (1961) argues that in dialects spoken in the north of the Netherlands, elements can only interrupt a verb cluster if they form a fixed expression with the main verb, as in (74).

(74) …dat ooit het menselijk vernuft   zou   hebben tot stand brengen. (Verhasselt 1961:155)
        that ever the human   ingenuity would have   to stand bring
        '…that would ever have brought about the human ingenuity.'

This claim is in line with a recent proposal made by Koster (1994). He argues that items that 'form a close semantic unit with the verb, often of an idiomatic nature' can be incorporated in the verb[59] and consequently occur within a verb cluster. However, Koelmans (1965) argues that some sentences in which the interrupted element does not form a fixed expression with the verb, are nevertheless accepted in northern Dutch and that interruption is not allowed with all fixed expressions in this language; according to him, sentence (75) is generally accepted in the Flemish dialects, but not in the north of the Netherlands.

---

[59] Koster argues that incorporation is the outcome of a movement to Spec-PredP. However, as discussed in section 2.1.1.3, incorporation processes cannot apply to these elements.

(75) Ja, met de voorstudie moet nog steeds worden een begin gemaakt. (Koelmans 1965:158)
Yes with the pilot must yet still become a start made
'Yes, the pilot still needs to be started.'

The acceptance of different types of elements by speakers of Standard Dutch was illustrated in Table 9, repeated here.

		accepted by number of speakers
Group 1	Adpositional particle	10/10
	Adverbial particle	10/10
Group 2	Predicate adjective	1/10
	Bare singular object	1/10
	Depictive (oriented at object)	0/10
	Bare plural object	1/10
	Resultative	3/10
	Depictive (oriented at subject)	2/10
Group 3	Subject	0/10
	Indefinite object	0/10
	Prepositional phrase	0/10
Group 4	Temporal adverb	1/10
	Definite object	0/10

Table 9: verb cluster interruptions with an epistemic modal

These results clearly indicate a difference from Flemish dialects; verb cluster interruptions are generally rare, and words consisting of more than a single element are generally disallowed in this language.

I argue that the difference between Flemish dialects and northern Dutch does not result from a difference in grammar, but, inter alia, from a difference in the position of the cut-off point in the Verb Cluster Interruption Hierarchy.

The synchronic differences can best be explained by a diachronic process of language change; then, verb cluster interruptions might be less common in northern Dutch, because the construction is slowly disappearing in this language, due to the processing difficulties of the construction. Hoeksema (1993, 1994) indeed demonstrates that, historically, verb cluster interruptions were more common in northern Dutch dialects.

(76) …doer dien dat god hadde ghedaen **den boerne vut der eerden** gaen. (12th century Dutch)[60]
     by   this that god had   made   the well   out the earth e   go
    '…because God had made the well spring from the earth.'

In fact, Van der Meer (1990) presents a number of verb cluster interruptions that were used in a dialect spoken in Friesland, which is a province in the north of the Netherlands, around 1540.

(77) a. …dat di scelta schol **dis onwilliga deel** nyma. (Van der Meer 1990:322)
       that the *scelta* shall the unwilling's share take.
      '…that the scelta must take the unwilling person's share.'
   b. …ende di scelta ende di aesga scellet **dae wepenen** scowia   bede ioendes ende moernes.
       and the *scelta* and the *aesga* shall   the weapons examine both evening and morning
      '…that the scelta and the aesga must examine the weapons both in the evening and in the morning.'

According to Hoeksema, the use of verb cluster interruptions gradually declined from the early 17th century (cf. Hoeksema 1994 and references cited therein).

As structures that are harder to process are expected to disappear from human grammar (Hawkins 2003), changes in verb cluster interruptions are hence hypothesized to be in accordance with the Verb Cluster Interruption Hierarchy; elements lower on the hierarchy are predicted to be excluded first. This prediction is indeed borne out; where Flemish dialects allow elements with more than one head to occur in the verb cluster, the maximum number of heads interrupting Standard Dutch verb clusters is one, and even these are only exceptionally allowed.[61]

To conclude, differences between Flemish dialects and Standard Dutch might be due to changes in language use, rather than to changes in grammar. The rare verb cluster interruptions in this language are in line with the Verb Cluster Interruption Hierarchy, which is expected as it follows from general principles of cognition.

Barbiers & Van Oostendorp (2013) also state that, even though verb cluster interruptions are not generally allowed by speakers of Standard Dutch, the attested patterns can nevertheless be active in their judging of verb cluster interruptions even when they generally disallow them. This entails that the Verb Cluster Interruption Hierarchy is hypothesized to correspond to a gradual acceptability in comparative judgment tasks.

Therefore, speakers of Standard Dutch were asked to order a number of sentences containing verb cluster interruptions by different types of elements. They are predicted (i) to rank syntactically simplex

---

[60] From Heynrijck van Veldeke's legend of Sint Servaes (cf. Hoeksema 1994:21).

[61] There is much variation in the group of syntactically simplex elements. This might be the result of some of these elements, such as the subject-oriented depictive *naaktzwemmen*, being idiomized in the language and hence being more acceptable in the verb cluster.

words, such as bare objects, higher than words that are syntactically more complex and (ii) to rank syntactically low elements higher than higher elements, such as adverbs.

The results of the comparative judgment task are illustrated in Table 24 and Table 25.

type of adverb	mean	standard deviation
MOODevaluative helaas	3.3	1.6
MODepistemic waarschijnlijk	4.1	1.5
Temporal toen	3.9	1.8
MODalethic mogelijk	4.3	1.7
ASPcontinuative voortdurend	3.0	1.5
VOICE goed	2.4	1.5

Table 24: the ranking of different types of adverbs by speakers of Standard Dutch

type of element	mean	standard deviation
resultatives	2.5	2.2
bare singular nouns	3.3	1.8
bare plural nouns	3.1	2.0
definite objects	5.8	1.8
VP-internal subjects	6.8	2.5
regular indefinite objects	5.9	2.0
prepositional phrases	5.8	2.3
true indefinite objects	6.3	1.8
adverbs	5.7	2.2

Table 25: the ranking of different types of elements by speakers of Standard Dutch

Strikingly, even though the results indicate that the ranking of the sentences is dependent on the type of adverb interrupting the verb cluster ($F(5,8220)=308.4$, $p<0.001$, $\eta^2=.2$), the judgments on the adverbs do not correspond to Cinque's hierarchy. Therefore, these elements cannot enlighten on the influence of syntactic position on the acceptability of a verb cluster interruption.

The results in Table 25, however, are more enlightening. These results indicate that the ranking of the sentences is indeed dependent on the type of element interrupting the verb cluster ($F(8,12321)=803.6$, $p<0.001$, $\eta^2=.3$).

The investigation included three VP-internal simplex words, namely a bare singular noun, a bare plural noun and a resultative. These items were all ranked significantly higher than syntactically more complex items ($p<.001$). Furthermore, the VP-internal simplex words were all ranked significantly higher than the adverbs ($p<.001$).

These results are in line with the Verb Cluster Interruption Hierarchy as depicted in (72). This is remarkable, considering that speakers of Standard Dutch rarely allow verb cluster interruptions by VP-internal syntactically simplex elements.

5. CONCLUSION

I have argued that verb cluster interruptions arise when interrupting elements do not move to a higher position. The possibility for an element to remain in its base-generated position follows from syntactic principles interacting with preferences of performance; processing requirements require elements that are low in the syntactic structure to be syntactically close to the verb. This requirement can be overruled by certain syntactic movement operations.

The finding that verb cluster interruptions result from an interaction between processing and syntactic structure confirms the idea that the human language system interacts with domain-general principles of human cognition (Chomsky 1968, 1984), and supports the minimalist thesis that that there is no variation in syntax and language variation should be explained by factors outside of grammar (cf. Chomsky 1995, 2005). Even though some have argued that grammar is not self-contained and that language variation is entirely dependent on language-external factors (cf. Croft 1995 and references cited therein), the results of this study indicate that there are in fact underlying universal syntactic principles present, which limit language variation – namely a hierarchic constituency structure. The results even showed that certain grammatical structures that are difficult for processing, can nevertheless occasionally be produced.

That syntax places an active role in the allowance of verb cluster interruptions, and not merely processing requirements, can further be demonstrated by testing a different word order. So far, I have only discussed verb cluster interruptions with verbs occurring in their hierarchical order V_1-X-V_2. As mentioned, this leads to competition, as V_1 as well as X prefer to be close to V_2. The optimal order for processing is hence one in which the main verb is positioned between the finite verb and the interrupting element: X-V_2-V_1 or V_1-V_2-X. In section 2.1.1.2, it became clear, however, that both these orders are excluded for syntactic reasons. As Map 3 demonstrates, this order is indeed rarely allowed; sentences in which the main verb is positioned between the bare noun and the modal verb are significantly less acceptable than sentences in which a bare noun interrupts the verb cluster ($\chi^2(1)=.18.7$ p<0.001, r=-.5).
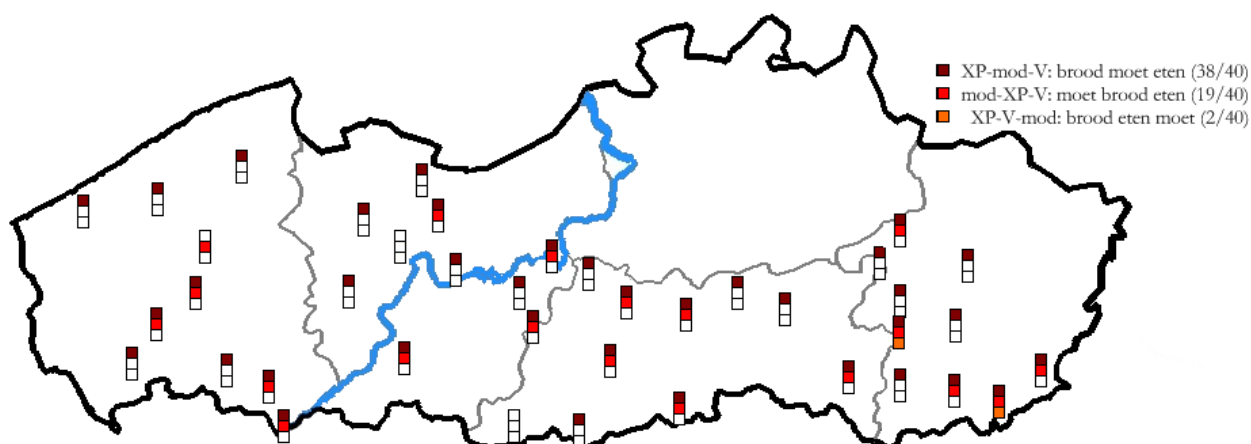
Map 3: different orderings

The results of this investigation thus indicate that language variation in verb cluster interruptions can be explained by syntactic principles as well as processing principles.

As the language system interacts with linguistic input, this theory can account for the difference that is found in verb cluster interruptions between Flemish and Standard Dutch. According to Chomsky, humans possess an innate biological language system, endowing children with a language acquisition device that facilitates the deciphering of the input they receive and hence to efficiently acquire their native language (Chomsky 1968, 1986b, 2006).

Under the assumption that the Verb Cluster Interruption Hierarchy is intrinsic to all languages, the implicational hierarchy is further interesting in light of the view that there are limits to the manner in which languages can vary (cf. Chomsky 1968, 1986b), as it implies that certain linguistic properties only seem to occur in language varieties that have certain other linguistic properties.

One issue that remains concerns the observed optionality in verb cluster interruptions. Many dialect speakers allowed sentences with a verb cluster interruption as well as sentences in which verb clusters were not interrupted. This raises the question of whether these speakers speak different languages, or whether their grammar allows multiple options. This cannot be indisputably decided on, as the investigation involved only one speaker per dialect. To make sure all observed properties belong to a single language, future research is required that investigates the speech of dialect speakers amongst each other.

There are a few further questions left for future research. A number of types of elements have not been tested due to limitations of the questionnaire. First, indirect objects should be included in future assessments. The acceptability of these items in a verb cluster can enlighten on their exact syntactic position. Under the assumption that these elements are base-generated in a VP-internal position, with

the option to move to a position preceding the direct object – as argued for by Fillmore (1965), among others – these elements are predicted to be less acceptable in a verb cluster than direct objects.[62]

(78) a. …dat Jan een boek aan Marie gaf.
      that Jan a   book to Marie gave
     '…that John gave a book to Marie.'
   b. …dat Jan Marie een boek gaf.
      that Jan Marie a   book gave
     '…that John gave Marie a book.'

Secondly, the results indicated that the acceptability of direct objects in the verb cluster lies between indefinite objects and pronouns. This can be expected seeing that direct objects only scramble to a higher position when they are not new in the discourse. In future research a distinction needs to be made between objects that have been introduced in the discourse and objects that are undoubtedly new in the discourse. The expectation is that, as elements that are new in the discourse generally do not scramble to a higher position, the latter will be significantly more acceptable in a verb cluster.

Thirdly, the investigation demonstrated that underlying objects in passive sentences are less acceptable in a verb cluster. This is unexpected, as verb cluster interruptions involve objects appearing in their base-generated position. As discussed, the unacceptability might be the result of the distance between the expletive subject and the direct object. This issue requires further analysis; in addition to an expletive in a passive sentence, future research should include a sentence with a transitive expletive as in (79)a, an expletive with a non-passive unaccusative as in (79)b, and an expletive with a raising verb as in (79)c to test the influence of expletive subjects on verb cluster interruptions.

(79) a. ik zie dat er   heeft iemand   gegeten.
    I see that there has   somebody eaten
     'I see that somebody has eaten.'
   b. Ik zie dat er   is een man gesprongen.
    I see that there is a   man jumped
     'I see that a man has jumped.'
   c. Ik zie dat het lijkt   mooi   weer   te worden.
    I see that it   seems beautiful weather to become
     'I see that the weather seems to become nice.'

Finally, the study investigated verb cluster interruptions between an auxiliary and a verb. However, the position between two auxiliaries in a three-partite verb cluster is at least as relevant, as this entails an additional potential position for the intervening element. In light of the claim that verb cluster

---

[62] For a review of the literature on double object constructions, the reader is referred to Emonds & Whitney (2006).

interruptions involve elements occurring in their base-generated positions, further investigation is essential.

REFERENCES

ABNEY, STEVEN. 1987. *The English noun phrase in its sentential aspect.* PhD dissertation. MIT.

BAKER, MARK, 1988. *Incorporation a theory of grammatical function change.* Chicago: University of Chicago Press.

BARBIERS, SJEF. 1995. *The syntax of interpretation.* PhD dissertation, Leiden University.

——. 2000. The right-periphery in SOV-languages: English and Dutch. In: Peter Svenonius (ed.), *The derivation of VO and OV.* Amsterdam: John Benjamins, pp. 181-218.

——. 2008. Werkwoordclusters en de grammatica van de rechter periferie. In: *Nederlandse taalkunde* 13:2, pp. 160 –197.

BARBIERS, SJEF, JOHAN VAN DER AUWERA, HANS BENNIS, EEFJE BOEF, GUNTHER DE VOGELAER AND MARGREET VAN DER HAM. 2008. *Syntactic atlas of the Dutch dialects, volume II.* Amsterdam: Amsterdam University Press.

BARBIERS, SJEF AND MARC VAN OOSTENDORP. 2013. Maps and grammar. Research proposal.

DEN BESTEN, HANS AND HANS BROEKHUIS. 1992. Verb projection raising in het Nederlands. In: *Spektator* 21, pp. 21-34.

DEN BESTEN, HANS AND JEROLD EDMONDSON. 1983. The verbal complex in continental West Germanic. In: Werner Abraham (ed.), *On the formal syntax of the Westgermania.* Amsterdam: John Benjamins, pp. 155-216.

CHIERCHIA, GENNARO. 1998. Reference to kinds across languages. In: *Natural language semantics* 6:4, pp. 339-405.

CHOMSKY, NOAM. 1968. *Language and mind.* New York: Harcourt Brace Jovanovich.

——. 1981. *Lectures on government and binding.* Dordrecht: Foris.

——. 1984. *Modular approaches to the study of the mind.* San Diego: San Diego State University Press.

——. 1986a. *Barriers.* Cambridge: MIT Press.

——. 1986b. *Knowledge of language: its nature, origin, and use.* Westport: Praeger Publishers.

——. 1993. A minimalist program for linguistic theory. In: Kenneth Hale and Samuel Keyser (eds.), *The view from building 20: essays in linguistics in honor of Sylvain Bromberger.* Cambridge: MIT Press, pp. 1-52.

——. 1991. Some Notes on the economy of derivation and representation. In: Itziar Laka and Anoop Mahajan (eds.), *MIT working papers in linguistics* 10: *functional heads and clause structure*, pp. 43-74,

1989. Reprinted in: Robert Freidin (ed.), *Current studies in linguistics* 20: *principles and parameters in comparative grammar*. Cambridge: MIT Press, pp. 417-454.

——. 1995. *The minimalist program*. Cambridge: MIT Press.

——. 2004. Beyond explanatory adequacy. In: Andrea Billetti (ed.), *The cartography of syntactic structures*. Oxford: Oxford University Press, pp. 104-131.

——. 2005. Three factors in language design. In: *Linguistic inquiry* 36, pp. 1–22.

CINQUE, GUGLIELMO. 1999. *Adverbs and functional heads: a cross-linguistic perspective*. Oxford: Oxford University Press.

——. 2006. *Restructuring and functional heads: the cartography of syntactic structures* 4. Oxford: Oxford University Press.

COHEN, JACOB. 1988. *Statistical power analysis for the behavioural sciences*. Second edition. New York: Academic Press.

——. 1992. A power primer. In: *Psychological bulletin* 112:1, pp. 155-159.

COPPEN, PETER-ARNO AND MAARTEN KLEIN. 1992. Het eind van verb raising. In: Maarten Klein (ed.), *Nieuwe eskapades in de neerlandistiek: opstellen van vrienden voor M.C. van den Toorn bij zijn afscheid als hoogleraar Nederlandse Taalkunde aan de Katholieke Universiteit Nijmegen. Groningen*. Wolters-Noordhoff, pp. 32-46.

CROFT, WILLIAM. 1995. Autonomy and functionalist linguistics. In: *Language* 71:3, pp. 490-532.

DEN DIKKEN, MARCEL. 1994. Minimalist verb (projection) raising. In: Jan-Wouter Zwart (ed.), *Groninger arbeiten zur germanistischen Linguistik* 37, pp. 71-88.

DOLAN, CONOR. 1994. Factor analysis of variables with 2, 3, 5 and 7 response categories: A comparison of categorical variable estimators using simulated data. In: *British journal of mathematical and statistical psychology* 47:2, pp. 309–326.

EMONDS, JOSEPH AND ROSEMARIE WHITNEY. 2006. Double object constructions. In: Martin Everaert and Henk van Riemsdijk (eds.), *The Blackwell Companion to syntax, volume I*. Oxford: Blackwell Publishing, pp. 73-144.

ERNST, THOMAS. 2002. *The syntax of adjuncts*. Cambridge studies in linguistics 96. Cambridge: Cambridge University Press.

FIELD, ANDY. 2005. *Discovering statistics using SPSS (and sex, drugs and rock 'n' roll)*. Second edition. London: Sage Publications.

FILLMORE, CHARLES. 1965. *Indirect object constructions in English and the ordering of transformations*. The Hague: Mouton.

HAEGEMAN, LILIANE. 1995. The Syntax of Negation. Cambridge: Cambridge University Press.

HAESERYN, WALTER 1990. *Syntactische normen in het Nederlands: een empirisch onderzoek naar volgordevariatie in de werkwoordelijke eindgroep*. Doctoral dissertation, Katholieke Universiteit Nijmegen.

HAIDER, HUBERT. 2006. Mittelfeld phenomena (scrambling in Germanic). In: Martin Everaert and Henk van Riemsdijk (eds.), *The Blackwell Companion to syntax, volume I*. Oxford: Blackwell Publishing, pp. 205-274.

HAWKINS, JOHN. 1994. *A performance theory of order and constituents*. Cambridge: Cambridge University Press.

———. 2003. Efficiency and complexity in grammars: three general principles. In: John Moore and Maria Polinsky (eds.), *The nature of explanation in linguistic theory*. California: CSLI Publications, pp. 121-152.

———. 2004. *Efficiency and complexity in grammars*. Oxford: Oxford University Press.

HENDRIKS, PETRA, HELEN DE HOOP, IRENE KRÄMER, HENRIËTTE DE SWART AND JOOST ZWARTS. 2010. *Conflicts in Interpretation*. Equinox Publishing.

HOEKSEMA, JACOB. 1993. Suppression of a word order pattern in West Germanic. In: Jaap van Marle (ed.), *Historical linguistics* 1991. Papers from the 10th international conference on historical linguistics. John Benjamins, Amsterdam/Philadelphia, 1993, pp. 153-174.

———. 1994. The history of Dutch verb projection raising. Unpublished paper.

KAAN, EDITH. 1992. A minimalist approach to extraposition of CP and verb (projection) raising. In: Dicky Gilbers and Sietze Looyenga (eds.), *Language and cognition 2*. Annual proceedings of the research group for linguistic theory and knowledge representation of the University of Groningen, pp. 169-179.

KAYNE, RICHARD. 1994. *The antisymmetry of syntax*. Cambridge: MIT Press.

———. 2000. *Parameters and universals*. New York: Oxford University Press.

———. 2002. On some prepositions that look DP-internal: English of and French de. In: *Catalan journal of linguistics* 1, pp. 71–115.

KITAHARA, HISATSUGU. 1992. Checking theory and scope interpretation without quantifier raising. In: Susumu Kuno and Hoskuldur Thrainsson (eds.), *Harvard working papers in linguistics* 1, pp. 51-71.

KOELMANS, LEENDERT. 1965. Iets over de woordvolgorde bij samengestelde predikaten in het Nederlands. In: *De nieuwe taalgids* 58, pp. 156-65.

KOSTER, JAN. 1994. Predicate Incorporation and the Word Order of Dutch. In: Guglielmo Cinque, Jean-Yves Pollock, Luigi Rizzi and Rafaella Zanuttini. (eds.), *Paths towards Universal Grammar: studies in honor of Richard Kayne*. Washington: Georgetown University.

LARSON, RICHARD. 1989. Light predicate raising. In: *MIT lexicon project working papers* 27.

LONGOBARDI, GUISEPPE. 1994. Reference and proper names: a theory of N-movement in syntax and logical form. In: *Linguistic inquiry* 25:4, pp. 609-665.

——. 1996. *The syntax of N-raising: a minimalist theory. OTS working papers* 5. Research institute for language and speech, Utrecht.

VAN DER MEER, GEART. 1990. On the position of Old Frisian verbs and pronouns. In: Rolf Bremmer, Geart van der Meer and Oebele Vries (eds.), *Amsterdamer Beitrage zur älteren Germanistik* 31-32/Estrikken 69. Aspects of Old Frisian philology. Amsterdam: Rodopi, pp. 311–335.

MILLER, GEORGE AND NOAM CHOMSKY. 1963. Finitary models of language users. In: Duncan Luce, Robert Bush and Eugene Galanter (eds.), *Handbook of mathematical psychology* 2. New York: Wiley, pp. 419-492.

POLLOCK, JEAN-YVES. 1989. Verb movement, universal grammar, and the structure of IP. In: *Linguistic inquiry* 20:3, pp. 365-424.

ROSS, JOHN 1986. *Infinite syntax!* Norwood: Ablex.

SZABOLCSI, ANNA. 1987. Functional categories in the noun phrase. In: István Kenesei (ed.), *Approaches to Hungarian* 2: *theories and analyses.* Szeged: Jate, pp. 167-189.

STOWELL, TIMOTHY. 1982. Conditions on reanalysis. In: Alec Marantz and Tim Stowell (eds.), *Papers in syntax. MIT working papers in linguistics* 4, pp. 245-269.

——. 1989. Subjects, specifiers, and X-bar theory. In: Mark Baltin and Anthony Kroch (eds.), *Alternative conceptions of phrase structure.* Chicago: University of Chicago Press, pp. 232-262.

——. 1991. Determiners in NP and DP. In: Katherine Leffel and Denis Bouchard (eds.), *Views on phrase structure.* Studies in Natural Language and Linguistic theory 25. Dordrecht: Kluwer Academic Publishers Group, pp. 37-56.

TOIVONEN, IDA. 2001. *The phrase structure of non-projecting words.* PhD dissertation. Stanford University.

TRAVIS, LISA. 1984. *Parameters and effects of word order variation.* PhD dissertation. MIT.

VANACKER, VALÈRE. 1970. Is het algemeen Zuidnederlands? In: *Taal en tongval* 16, pp.159-164.

——. 1970. Een 'Zuidnederlandse' konstruktie in een paar Zuidnederlandse dialekten. In: *Nieuwe taalgids* (Van Haeringen-nummer), pp. 140-57.

VERHASSELT, JAN. 1961. Verschillen tussen Noord en Zuid inzake de volgorde hulpwerkwoord-hoofdwerkwoord. In: *Taal en tongval* 13, pp. 153-157.

WURMBRAND, SUSI. 2006. Verb clusters, verb raising, and restructuring. In: Martin Everaert and Henk van Riemsdijk (eds.), *The Blackwell Companion to syntax, volume V.* Oxford: Blackwell Publishing, pp. 229-343.

ZANUTTINI, RAFFAELLA. 1997. *Negation and clausal structure: a comparative study of Romance languages.* New York: Oxford University Press.

ZWART, JAN-WOUTER. 1994. Dutch is head initial. In: *The linguistic review* 11:3-4, pp. 377-406.

——. 1996. Verb clusters in Continental West Germanic dialects. In: James Black and Virginia Motapanyane (eds.), *Microparametric syntax and dialect variation.* Amsterdam: John Benjamins, pp. 229-258.

——. 1997. *Morphosyntax of verb movement: a minimalist approach to the syntax of Dutch.* Studies in Natural Language and Linguistic Theory 39. Dordrecht: Kluwer Academic Publishers Group.

——. 2011. *The syntax of Dutch.* Cambridge: Cambridge University Press.

Appendix I.   BACKGROUND PARTICIPANTS
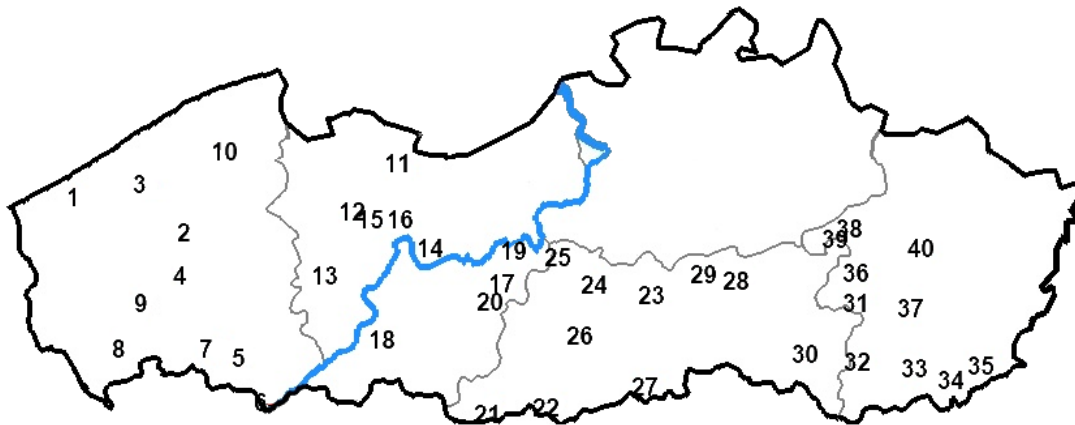
Map 4: locations informants

	Dialect of	Sex	Year of birth	Educa-tion	Parents born in city of dialect?	Always lived there?	Speaks dialect daily?	In more than 1 domain?
1	Nieuwpoort	M	1950	Higher	Y	Y	Y	Y
2	Torhout	V	1929	Lower	Y	Y	Y	Y
3	Gistel	V	1943	Lower	N (Only 1 of them, the other nearby - Eernegem)	N (Oostende from 1943-1953)	Y	Y
4	Hooglede	M	1930	Middle	N (both nearby; Gits & Klerken)	N (since 1955)	Y	Y
5	Kortrijk	M	1934	Middle	Y	Y	Y	Y
6	Kooigem	M	1933	Middle	N (nearby; Spiere)	N (since 1961)	Y	Y
7	Moorsele	M	1942	Higher	Y	Y	Y	Y
8	Ieper	M	1920	Lower	N	N (since 1921)	Y	Y
9	Poelkapelle	M	1926	Higher	Y	Y	Y	Y
10	Brugge	V	1969	Higher	N (Only 1 of them, the other nearby - Blankenberge)	Y (always region Brugge)	Y	Y
11	Ertvelde	M	1981	Higher	N (Only 1 of them, the other nearby - assenede)	Y	Y	N (only at home)
12	Lovendegem	M	1936	Middle	Y	Y	Y	Y
13	Deinze	M	1932	Middle	N (Only 1 of them, the other	Y	Y	Y

					nearby - pepegem)			
14	Laarne	M	1959	Higher	N (Only 1 of them, the other nearby - lochristi)	Y	Y	Y
15	Hansbeeke	V	1940	Higher	Y	N (untill 1961, region Gent ever since)	Y	Y
16	Gent (Oostakker)	M	1928	Lower	Y	Y	Y	Y
17	Hofstade (bij Aalst)	M	1939	Lower	Y	N (nearby - Gijzegem until 10 y/o)	Y	Y
18	Michielbeke	M	1942	Middle	N (only 1 of them, the other nearby; St Cornelis hoorebeke)	N (until 2005)	Y	N (only at home)
19	Moerzeke	M	1949	Middle	Y	Y	Y	Y
20	Aalst	M	1976	Higher	N (only 1 of them, the other nearby; Kortrijk	N (since 1989	N (two-4 times a month)	N (only with friends)
21	Herne	M	1947	Higher	N (nearby; St. Pieters-Kapelle)	Y	Y	Y
22	Halle	M	1946	Middle	Y	Y	Y	Y
23	Kampenhout	V	1925	Lower	Y	Y	Y	Y
24	Humbeek (Grimbergen)	V	1935	Middle	N (nearby; Zemst)	Y	Y	Y
25	Malderen (Londerzeel)	M	1930	Middle	N (nearby; Opdorp & Meise)	Y	Y	Y
26	Jette (Brussel)	V	1934	Middle	N (only 1 nearby; Ganshoren & Eeschen)	Y	Y	Y
27	Overijse	M	1921	Middle	N (only 1 of them, the other nearby; Glabbeek	Y	Y	Y
28	Aarschot (Langdorp)	V	1942	Middle	N (nearby; Langdorp - Wolfsdonk)	Y	Y	Y
29	Tremelo	M	1951	Middle	Y	Y	Y	Y
30	Zoutleeuw	M	1961	Middle	Y	Y	Y	Y

31	Herk-de-Stad	M	1991	Higher	N(only 1 of them, the other nearby; Hasselt)	Y	N (only in weekends at home)	N (only at home)
32	Sint-Truiden	V	1936	Higher	Y	Y	Y	Y
33	Rijkel (Borgloon)	M	1933	Higher	N (only of them, the other nearby; St. Truiden)	N (away from 1962-1993)	Y	N (only in the village)
34	Tongeren	M	1940	Higher	Y	Y	Y	N (only in the village)
35	Bilzen (Grote-Spouwen)	M	1935	Higher	Y	Y	Y	Y
36	Lummen	M	1942	Higher	N (yes, but raised by great aunts from nearby; Tessenderlo & Engsbergen)	N (since 1944)	Y	Y
37	Hasselt	M	1943	Higher	Y	Y	Y	Y
38	Kwaadmechelen	M	1944	Middle	Y	Y	Y	Y
39	Tessenderlo	V	1947	Middle	N (only one of them, the other nearby; Olmen)	N (until 1968)	Y	Y
40	Houthalen-Helchteren	M	1955	Higher	Y	Y	Y	Y

Appendix II. QUESTIONNAIRE ROUND 1

1: Different types of elements

Indefinite subject:	Ik vind dat er [een nieuwe man] moet komen.
	Ik vind dat er moet [een nieuwe man] komen.
Adpositional particle:	Ik vind dat Jan Marie [op] moet bellen.
	Ik vind dat Jan Marie moet [op] bellen.
	Ik vind dat Jan moet [Marie] [op] bellen.
Adverbial particle:	Ik vind dat Jan de foto [weg] moet gooien.
	Ik vind dat Jan de foto moet [weg] gooien.
	Ik vind dat Jan moet [de foto] [weg] gooien.
Predicate adjective:	Ik vind dat Jan [blij] moet zijn.
	Ik vind dat Jan moet [blij] zijn.
Resultative particle:	Ik vind dat Jan de meloen [open] moet snijden.
	Ik vind dat Jan de meloen moet [open] snijden.
Resultative:	Ik vind dat Jan het feest [mogelijk] moet maken.
	Ik vind dat Jan het feest moet [mogelijk] maken.
Subject oriented depictive:	Ik vind dat Jan [naakt] moet zwemmen.
	Ik vind dat Jan moet [naakt] zwemmen.
Object oriented depictive	Ik vind dat Jan de soep [koud] moet eten.
	Ik vind dat Jan de soep moet [koud] eten.
Definite object:	Ik vind dat Jan [de auto] moet verkopen.
	Ik vind dat Jan moet [de auto] verkopen.
Plural object:	Ik vind dat Jan [taarten] moet bakken.
	Ik vind dat Jan moet [taarten] bakken.
Bare object:	Ik vind dat Jan [brood] moet eten.
	Ik vind dat Jan moet [brood] eten.

Negative object: Ik zie dat Jan [geen snoep] moet eten.
Vraag: welke van de volgende uitspraken is van toepassing op deze zin:
a. Jan is verplicht om geen snoep te eten.
b. Het is Jan niet verplicht om snoep te eten.
c. Beide zijn mogelijk/anders nl.

Ik zie dat Jan moet [geen snoep] eten.
Vraag: welke van de volgende uitspraken is van toepassing op deze zin:
a. Jan is verplicht om geen snoep te eten.
b. Jan is niet verplicht om snoep te eten.
c. Beide zijn mogelijk/anders nl.

Ik zie dat Jan [niemand] moet pesten.
Vraag: welke van de volgende uitspraken is van toepassing op deze zin:

a. Jan is verplicht om niemand te pesten.
b. Jan is niet verplicht om iemand te pesten.
c. Beide zijn mogelijk/anders nl.

Ik zie dat Jan moet [niemand] pesten.
Vraag: welke van de volgende uitspraken is van toepassing op deze zin:
a. Jan is verplicht om niemand te pesten.
b. Jan is niet verplicht om iemand te pesten.
c. Beide zijn mogelijk/anders nl.

Ik zie dat Jan [niets] moet doen.
Vraag: welke van de volgende uitspraken is van toepassing op deze zin:
a. Jan is verplicht om niets te doen.
b. Jan is niet verplicht om iets te doen.
c. Beide zijn mogelijk/anders nl.

Ik zie dat Jan moet [niets] doen.
a. Jan is verplicht om niets te doen.
b. Jan is niet verplicht om iets te doen.
c. Beide zijn mogelijk/anders nl.

Ik zie dat Jan [geen snoep] mag eten.
Vraag: welke van de volgende uitspraken is van toepassing op deze zin:
a. Het is Jan toegestaan om geen snoep te eten.
b. Het is Jan niet toegestaan om snoep te eten.
c. Beide zijn mogelijk

Ik zie dat Jan mag [geen snoep] eten.
Vraag: welke van de volgende uitspraken is van toepassing op deze zin:
a. Het is Jan toegestaan om geen snoep te eten.
b. Het is Jan niet toegestaan om snoep te eten.
c. Beide zijn mogelijk

Ik zie dat Jan [niemand] mag pesten.
Vraag: welke van de volgende uitspraken is van toepassing op deze zin:
a. Het is Jan toegestaan om niemand te pesten.
b. Het is Jan niet toegestaan om iemand te pesten.
c. Beide zijn mogelijk/anders nl.

Ik zie dat Jan mag [niemand] pesten.
Vraag: welke van de volgende uitspraken is van toepassing op deze zin:

Verbal breakups

        a. Het is Jan toegestaan om niemand te pesten.
        b. Het is Jan niet toegestaan om iemand te pesten.
        c. Beide zijn mogelijk/anders nl.

        Ik zie dat Jan [niets] mag doen.
        Vraag: welke van de volgende uitspraken is van toepassing op deze zin:
        a. Het is Jan toegestaan om niets te doen.
        b. Het is Jan niet toegestaan om iets te doen.
        c. Beide zijn mogelijk/anders nl.

        Ik zie dat Jan mag [niets] doen.
        Vraag: welke van de volgende uitspraken is van toepassing op deze zin:
        a. Het is Jan toegestaan om niets te doen.
        b. Het is Jan niet toegestaan om iets te doen.
        c. Beide zijn mogelijk/anders nl.

2: Cinque's hierarchy

Different verb types with different interruptions & all adverbs

Negative adverb

Modal (epistemic):	Ik zie dat Jan [niet] kan winnen.
	Ik zie dat Jan kan [niet] winnen.
	Ik zie dat Jan [nooit] kan winnen.
	Ik zie dat Jan kan [nooit] winnen.
Present aux:	Ik zie dat Jan [niet] heeft gewonnen.
	Ik zie dat Jan heeft [niet] gewonnen.
	Ik zie dat Jan [nooit] heeft gewonnen.
	Ik zie dat Jan heeft [nooit] gewonnen.
Past aux:	Ik zag dat Jan [niet] had gewonnen.
	Ik zag dat Jan had [niet] gewonnen.
	Ik zag dat Jan [nooit] had gewonnen.
	Ik zag dat Jan had [nooit] gewonnen.
Future aux	Ik zie dat Jan [niet] zal winnen.
	Ik zie dat Jan zal [niet] winnen.
	Ik zie dat Jan [nooit] zal winnen.
	Ik zie dat Jan zal [nooit] winnen.
Modal (root):	Ik vind dat Jan [niet] moet winnen.
	Ik vind dat Jan moet [niet] winnen.
	Ik vind dat Jan [nooit] moet winnen.
	Ik vind dat Jan moet [nooit] winnen.
Aspectual (continuative):	Ik zie dat Jan [niet] blijft piekeren.

Ik zie dat Jan blijft [niet] piekeren.
Ik zie dat Jan [nooit] blijft piekeren.
Ik zie dat Jan blijft [nooit] piekeren.

Mood adverb

Modal (epistemic):   Ik zie dat Jan [helaas] kan winnen.
Ik zie dat Jan kan [helaas] winnen.

Present aux: Ik zie dat Jan [helaas] heeft gewonnen.
Ik zie dat Jan heeft [helaas] gewonnen.

Past aux: Ik zag dat Jan [helaas] had gewonnen.
Ik zag dat Jan had [helaas] gewonnen.

Future aux   Ik zie dat Jan [helaas] zal winnen.
Ik zie dat Jan zal [helaas] winnen.

Modal (root):   Ik zie dat Jan [helaas] moet winnen.
Ik zie dat Jan moet [helaas] winnen.

Aspectual (continuative):   Ik zie dat Jan [helaas] blijft piekeren.
Ik zie dat Jan blijft [helaas] piekeren.

Modal (epist)

Modal (epistemic):   Ik zie dat Jan [waarschijnlijk] kan winnen.
Ik zie dat Jan kan [waarschijnlijk] winnen.

Present aux: Ik zie dat Jan [waarschijnlijk] heeft gewonnen.
Ik zie dat Jan heeft [waarschijnlijk] gewonnen.

Past aux: Ik zag dat Jan [waarschijnlijk] had gewonnen.
Ik zag dat Jan had [waarschijnlijk] gewonnen.

Future aux   Ik zie dat Jan [waarschijnlijk] zal winnen.
Ik zie dat Jan zal [waarschijnlijk] winnen.

Modal (root):   Ik zie dat Jan [waarschijnlijk] moet spelen.
Ik zie dat Jan moet [waarschijnlijk] spelen.

Aspectual (continuative):   Ik zie dat Jan [waarschijnlijk] blijft piekeren.
Ik zie dat Jan blijft [waarschijnlijk] piekeren.

Temporal adverb

Modal (epistemic):   Ik zag dat Jan [toen] kon winnen.
Ik zag dat Jan kon [toen] winnen.

Present aux: Ik zag dat Jan [toen] heeft gewonnen.
Ik zag dat Jan heeft [toen] gewonnen.

Past aux: Ik zag dat Jan [toen] had gewonnen.
Ik zag dat Jan had [toen] gewonnen.

Future aux   Ik zag dat Jan [toen] zou winnen.

Verbal breakups

	Ik zag dat Jan zou [toen] winnen.
Modal (root):	Ik wist dat Jan [toen] moest winnen.
	Ik wist dat Jan moest [toen] winnen.
Aspectual (continuative):	Ik zag dat Jan [toen] bleef piekeren.
	Ik zag dat Jan bleef [toen] piekeren.

Modal (root)

Modal (epistemic):	Ik zie dat Jan [mogelijk] kan winnen.
	Ik zie dat Jan kan [mogelijk] winnen.
Present aux:	Ik zie dat Jan [mogelijk] heeft gewonnen.
	Ik zie dat Jan heeft [mogelijk] gewonnen.
Past aux:	Ik zag dat Jan [mogelijk] had gewonnen.
	Ik zag dat Jan had [mogelijk] gewonnen.
Future aux	Ik zie dat Jan [mogelijk] zal winnen.
	Ik zie dat Jan zal [mogelijk] winnen.
Modal (root):	Ik zie dat Jan [noodzakelijk] moet winnen.
	Ik zie dat Jan moet [noodzakelijk] winnen.
Aspectual (continuative):	Ik zie dat Jan [mogelijk] blijft piekeren.
	Ik zie dat Jan blijft [mogelijk] piekeren.

Aspect (continuative)

Modal (epistemic):	Ik merk dat Jan [voortdurend] kan zeuren.
	Ik merk dat Jan kan [voortdurend] zeuren.
Present aux:	Ik merk dat Jan [voortdurend] heeft gebreid.
	Ik merk dat Jan heeft [voortdurend] gebreid.
Past aux:	Ik merkte dat Jan [voortdurend] had gebreid.
	Ik merkte dat Jan had [voortdurend] gebreid.
Future aux	Ik zie dat Jan [voortdurend] zal breien.
	Ik zie dat Jan zal [voortdurend] breien.
Modal (root):	Ik merk dat Jan [voortdurend] moet eten.
	Ik merk dat Jan moet [voortdurend] eten.
Aspectual (continuative):	Ik merk dat Jan [voortdurend] blijft eten.
	Ik merk dat Jan blijft [voortdurend] eten.

Voice

Modal (epistemic):	Ik vind dat Jan [goed] kan fietsen.
	Ik vind dat Jan kan [goed] fietsen.
Present aux:	Ik vond dat Jan [goed] heeft gefietst.
	Ik vond dat Jan heeft [goed] gefietst.
Past aux:	Ik vond dat Jan [goed] had gefietst.
	Ik vond dat Jan had [goed] gefietst.
Future aux	Ik zie dat Jan [goed] zal fietsen.

Ik zie dat Jan zal [goed] fietsen.

Modal (root):	Ik vind dat Jan [goed] moet fietsen.
	Ik vind dat Jan moet [goed] fietsen.
Aspectual (continuative):	Ik hoop dat Jan [goed] blijft fietsen.
	Ik hoop dat Jan blijft [goed] fietsen.

Indefinite subject

Modal (epistemic):	Ik vind dat er [een nieuwe man] kan komen.
	Ik vind dat er kan [een nieuwe man] komen.
Present aux:	Ik zie dat er [een nieuwe man] is gekomen.
	Ik zie dat er is [een nieuwe man] gekomen.
Past aux:	Ik zag dat er [een nieuwe man] was gekomen.
	Ik zag dat er was [een nieuwe man] gekomen.
Future aux:	Ik zie dat er [een nieuwe man] zal komen.
	Ik zie dat er zal [een nieuwe man] komen.
Aspectual (continuative):	Ik hoop dat er [een trein] blijft rijden.
	Ik hoop dat er blijft [een trein] rijden.

Adpositional particle

Modal (epistemic):	Ik weet dat Jan Marie [op] kan bellen.
	Ik weet dat Jan Marie kan [op] bellen.
Present aux:	Ik weet dat Jan Marie [op] heeft gebeld.
	Ik weet dat Jan Marie heeft [op] gebeld.
Past aux:	Ik wist dat Jan Marie [op] had gebeld.
	Ik wist dat Jan Marie had [op] gebeld.
Future aux:	Ik weet dat Jan Marie [op] zal bellen.
	Ik weet dat Jan Marie zal [op] bellen.
Aspectual (continuative):	Ik denk dat Jan Marie [op] blijft bellen.
	Ik denk dat Jan Marie blijft [op] bellen.

Adverbial particle

Modal (epistemic):	Ik vind dat Jan de foto [weg] kan gooien.
	Ik vind dat Jan de foto kan [weg] gooien.
Present aux:	Ik weet dat Jan de foto [weg] heeft gegooid.
	Ik weet dat Jan de foto heeft [weg] gegooid.
Past aux:	Ik wist dat Jan de foto [weg] had gegooid.
	Ik wist dat Jan de foto had [weg] gegooid.
Future aux:	Ik weet dat Jan de foto [weg] zal gooien.
	Ik weet dat Jan de foto zal [weg] gooien.
Aspectual (continuative):	Ik weet dat Jan eten [weg] blijft gooien.

Verbal breakups

Ik weet dat Jan eten blijft [weg] gooien.

Predicate adjective

Modal (epistemic):   Ik wil dat Jan [gelukkig] kan zijn.
Ik wil dat Jan kan [gelukkig] zijn.

Present aux: Ik weet dat Jan [gelukkig] is geweest.
Ik weet dat Jan is [gelukkig] geweest.

Past aux: Ik wist dat Jan [verdrietig] was geweest.
Ik wist dat Jan was [verdrietig] geweest.

Future aux: Ik weet dat Jan [verdrietig] zal zijn.
Ik weet dat Jan zal [verdrietig] zijn.

Aspectual (continuative):   Ik wil dat Jan [gelukkig] blijft zijn.
Ik wil dat Jan blijft [gelukkig] zijn.

Resultative

Modal (epistemic):   Ik vind dat Jan de auto [rood] kan verven.
Ik vind dat Jan de auto kan [rood] verven.

Present aux: Ik weet dat Jan de auto [rood] heeft geverfd.
Ik weet dat Jan de auto heeft [rood] geverfd.

Past aux: Ik wist dat Jan de auto [rood] had geverfd.
Ik wist dat Jan de auto had [rood] geverfd.

Future aux: Ik weet dat Jan de auto [rood] zal verven.
Ik weet dat Jan de auto zal [rood] verven.

Aspectual (continuative):   Ik weet dat Jan de auto [rood] blijft verven.
Ik weet dat Jan de auto blijft [rood] verven.

Object oriented depictive

Modal (epistemic):   Ik vind dat Jan de soep [koud] kan eten.
Ik vind dat Jan de soep kan [koud] eten.

Present aux: Ik weet dat Jan de soep [koud] heeft gegeten.
Ik weet dat Jan de soep heeft [koud] gegeten.

Past aux: Ik wist dat Jan de soep [koud] had gegeten.
Ik wist dat Jan de soep had [koud] gegeten.

Future aux: Ik weet dat Jan de soep [koud] zal eten.
Ik weet dat Jan de soep zal [koud] eten.

Aspectual (continuative):   Ik weet dat Jan de soep [koud] blijft serveren.
Ik weet dat Jan de soep blijft [koud] serveren.

Definite object:

Modal (epistemic):   Ik vind dat Jan [de auto] kan verkopen.
Ik vind dat Jan kan [de auto] verkopen.

Present aux:	Ik weet dat Jan [de auto] heeft verkocht.
	Ik weet dat Jan heeft [de auto] verkocht.
Past aux:	Ik wist dat Jan [de auto] had verkocht.
	Ik wist dat Jan had [de auto] verkocht.
Future aux:	Ik weet dat Jan [de auto] zal verkopen.
	Ik weet dat Jan zal [de auto] verkopen.
Aspectual (continuative):	Ik weet dat Jan [de auto] blijft verven.
	Ik weet dat Jan blijft [de auto] verven.

Indefinite object

Modal (epistemic):	Ik weet dat Jan [een kilometer] kan rennen.
	Ik weet dat Jan kan [een kilometer] rennen.
Present aux:	Ik weet dat Jan [een kilometer] heeft gerend.
	Ik weet dat Jan heeft [een kilometer] gerend.
Past aux:	Ik wist dat Jan [een kilometer] had gerend.
	Ik wist dat Jan had [een kilometer] gerend.
Future aux:	Ik weet dat Jan [een kilometer] zal rennen.
	Ik weet dat Jan zal [een kilometer] rennen.
Aspectual (continuative):	Ik hoop dat Jan [een kilometer] blijft rennen.
	Ik hoop dat Jan blijft [een kilometer] rennen.

Plural object:

Modal (epistemic):	Ik weet dat Jan [taarten] kan bakken.
	Ik weet dat Jan kan [taarten] bakken.
Present aux:	Ik weet dat Jan [taarten] heeft gebakken.
	Ik weet dat Jan heeft [taarten] gebakken.
Past aux:	Ik wist dat Jan [taarten] had gebakken.
	Ik wist dat Jan had [taarten] gebakken.
Future aux:	Ik weet dat Jan [taarten] zal bakken.
	Ik weet dat Jan zal [taarten] bakken.
Aspectual (continuative):	Ik hoop dat Jan [taarten] blijft bakken.
	Ik hoop dat Jan blijft [taarten] bakken.

Bare object:

Modal (epistemic):	Ik weet dat Jan [brood] kan bakken.
	Ik weet dat Jan kan [brood] bakken.
Present aux:	Ik weet dat Jan [brood] heeft gebakken.
	Ik weet dat Jan heeft [brood] gebakken.
Past aux:	Ik wist dat Jan [brood] had gebakken.
	Ik wist dat Jan had [brood] gebakken.

Verbal breakups

Future aux: Ik hoop dat Jan [brood] zal bakken.
                            Ik hoop dat Jan zal [brood] bakken.
Aspectual (continuative):   Ik hoop dat Jan [brood] blijft bakken.
                            Ik hoop dat Jan blijft [brood] bakken.

PP's:

Temporal: Ik weet dat Jan [op vrijdag] moet werken.
                            Ik weet dat Jan moet [op vrijdag] werken.
Locative: Ik weet dat Jan [in het park] mag werken.
                            Ik weet dat Jan mag [in het park] werken.
Manner: Ik vind dat Jan [met de bus] moet komen.
                            Ik vind dat Jan moet [met de bus] komen.
Complement: Ik vind dat Jan [op Marie] moet wachten.
                            Ik vind dat Jan moet [op Marie] wachten.
SC predicate: Ik vind dat Jan de borden [op tafel] moet zetten.
                            Ik vind dat Jan de borden moet [op tafel] zetten.

PP as part of a pronominal adverb:

Locative: Ik hoop dat ik er [in] mag kijken.
                            Ik hoop dat ik er mag [in] kijken.
Manner: Ik vind dat Jan er [mee] moet reizen.
                            Ik vind dat Jan er moet [mee] reizen.
Complement: Ik denk dat Jan er [op] moet wachten.
                            Ik denk dat Jan er moet [op] wachten.
SC predicate: Ik vind dat Jan de borden er [op] moet zetten.
                            Ik vind dat Jan de borden er moet [op] zetten.

3: other variables

Definiteness

Indefinite object: Ik vind dat Jan [een kilometer] moet rennen.
                            Ik vind dat Jan moet [een kilometer] rennen.
Pronominal object: Ik vind dat Jan [hem] moet zien.
                            Ik vind dat Jan moet [hem] zien.
                            Ik vind dat Jan ['m] moet zien.
                            Ik vind dat Jan moet ['m] zien.
                            Ik vind dat Jan [dat] moet zien.
                            Ik vind dat Jan moet [dat] zien.

Ik vind dat Jan [wat] moet zien.
Ik vind dat Jan moet [wat] zien.

<u>More complex items</u>

Extra elements:
Ik vind dat Jan [de auto] morgen moet verkopen.
Ik vind dat Jan moet [de auto] morgen verkopen.
Ik vind dat Jan [morgen] [naar Gent] moet gaan.
Ik vind dat Jan moet [morgen] [naar Gent] gaan.

Longer constituents:
Ik vind dat Jan [brood met pindakaas] moet eten.
Ik vind dat Jan moet [brood met pindakaas] eten.
Ik vind dat Jan [vroeg] moet gaan.
Ik vind dat Jan moet [vroeg] gaan.
Ik vind dat Jan [vroeger] moet gaan.
Ik vind dat Jan moet [vroeger] gaan.
Ik vind dat Jan [vroeger dan Marie] moet gaan.
Ik vind dat Jan moet [vroeger dan Marie] gaan.
Ik vind dat Jan de meloen [helemaal open] moet snijden.
Ik vind dat Jan de meloen moet [helemaal open] snijden.

<u>Semantics</u>

Cognate object:
Ik vind dat Jan [een dutje] moet doen.
Ik vind dat Jan moet [een dutje] doen.

<u>4: Scope</u>

Scope two QP's:
Ik zie dat iedereen [een boek] gaat lezen.
Vraag: hoeveel boeken worden er in totaal gelezen? 1 of meer?

Ik zie dat iedereen gaat [een boek] lezen.
Vraag: hoeveel boeken worden er in totaal gelezen? 1 of meer?

Scope QP & modal verb
Ik zie dat Jan [geen toestemming] wil geven
Komt dit voor? J/N
Vertaal
Goed vertaald? J/N (N: Komt het voor J/N
Vraag: welke van de volgende uitspraken is van toepassing op deze zin:
a. Jan heeft geen zin om toestemming te geven.
b. Jan heeft zin om geen toestemming te geven.
c. Beide zijn mogelijk

Verbal breakups

Ik zie dat Jan wil [geen toestemming] geven
Komt dit voor? J/N
Vertaal
Goed vertaald? J/N (N: Komt het voor J/N
Vraag: welke van de volgende uitspraken is van toepassing op deze zin:
a. Jan heeft geen zin om toestemming te geven.
b. Jan heeft zin om geen toestemming te geven.
c. Beide zijn mogelijk

5: Different orderings

Adpositional particle: Ik vind dat Jan Marie [op] bellen moet.
Bare object: Ik vind dat Jan [brood] eten moet.
Temporal adverb: Ik vind dat Jan [vroeg] gaan moet.

Appendix III.   QUESTIONNAIRE ROUND 2

<u>Subject oriented depictive:</u>

Modal (epistemic):	Ik weet dat Jan [naakt] kan zwemmen.
	Ik weet dat Jan kan [naakt] zwemmen.
Present aux:	Ik weet dat Jan [naakt] heeft gezwommen.
	Ik weet dat Jan heeft [naakt] gezwommen.
Past aux:	Ik wist dat Jan [naakt] had gezwommen.
	Ik wist dat Jan had [naakt] gezwommen.
Future aux:	Ik weet dat Jan [naakt] zal zwemmen.
	Ik weet dat Jan zal [naakt] zwemmen.
Aspectual (continuative):	Ik weet dat Jan [naakt] blijft zwemmen.
	Ik weet dat Jan blijft [naakt] zwemmen.

<u>Other elements</u>

True indefinite object:	Ik vind dat Jan moet een schuur bouwen.
Bare subject in situ:	Ik vind dat er moet melk zijn.
Subject in situ:	Ik vind dat er moet een trein komen.
Underlying subject:	Ik zie dat er wordt een man geslagen.
Underlying object:	Ik weet dat er wordt brood gebakken.
True resultative:	Ik vind dat Jan de auto moet rood verven.
Contrastive pronoun:	Vraag: moet Jan HEM of HAAR bellen?
	Antwoord: ik vind dat Jan moet HEM bellen.
Focussed pronoun:	Vraag: wie moet Jan bellen?
	Antwoord: ik vind dat Jan moet HEM bellen.

<u>Influence article:</u>

Definite plural object:	Ik vind dat Jan moet de varkens slachten.
Bare plural object:	Ik vind dat Jan moet broden bakken.
Temporal, article+PP:	Ik vind dat Jan moet op een dag werken.
Locative bare PP:	Ik weet dat Jan moet op school studeren.
Manner, article +PP:	Ik vind dat Jan moet per trein komen.
Complement, bare PP:	Ik weet dat Jan moet op geld wachten.
SC article+PP:	Ik vind dat Jan de glazen moet op de tafel zetten.

<u>Complexity:</u>

Synt. incomplex, 1 morfeme, 1 syllable: Ik vind dat Jan moet boer worden.

Verbal breakups

Synt. incomplex, 1 morpheme, more syllables: Ik vind dat Jan moet chocola kopen.

Synt. incomplex, more morphemes & syllables: Ik vind dat Marie moet boerin worden.

Synt. incomplex, more morphemes & syllables: Ik vind dat Jan moet chocolaatjes kopen.

Synt. A bit complexer, 1 morpheme, 1 syllables: Ik vind dat Jan moet een pen kopen.

Synt. A bit complexer, 1 morpheme, more syllables: Ik vind dat Jan moet een thermometer kopen.

Synt. A bit complexer, more morphemes & syllables: Ik vind dat Jan moet een pennetje kopen.

Synt. Complex, many morphemes & syllables: Ik vind dat Jan moet vrachtwagenchauffeur worden.

Synt. Complex many morphemes & syllables: Ik vind dat Jan moet een donkergroene, rijpe meloen kopen.

Synt. Complex few morphemes & syllables: Ik vind dat Jan moet een mooi, wit paard kopen.

Syntactic complex, 1 syllable & morpheme: Ik vind dat Jan moet Els zoenen.

Syntactic complex, 1 morpheme, more syllables: Ik vind dat Jan moet Henriette zoenen.

Syntactic complex, more morphemes, more syllables: Ik vind dat Jan moet de meisjes zoenen.

Appendix IV.   MEERTENS PANEL SURVEY

Zet op volgorde

Instructie:

Hieronder staat een aantal zinnen. De meeste van deze zinnen zijn niet goed in het Nederlands. Ik wil u vragen om de zinnen op volgorde te zetten van beste naar slechtste.

De zinnen krijgen geen speciale nadruk of klemtoon en de woordvolgorde mag niet worden aangepast.

Bij twijfel wil ik u vragen om toch 1 volgorde te kiezen.

Ronde 1:

Uw keuze	Rankering	
Ik vind dat Jan moet op Marie wachten.	…………………………………	(beste)
Ik vind dat Jan moet vroeg gaan.	…………………………………	
Ik vind dat Jan moet taarten bakken.	…………………………………	
Ik vind dat Jan moet brood eten.	…………………………………	
Ik vind dat Jan moet de auto verkopen.	…………………………………	
Ik vind dat er moet een nieuwe man komen.	…………………………………	
Ik vind dat Jan moet een kilometer rennen.	…………………………………	
Ik vind dat Jan de auto moet rood verven.	…………………………………	
Ik vind dat Jan moet een schuur bouwen.	…………………………………	(slechtste)

Bedankt voor uw hulp!

Ronde 2:

Uw keuze	Rankering	
Ik wist dat Jan moest toen winnen.	…………………………………	(beste)
Ik weet dat Jan moet helaas gaan.	…………………………………	
Ik vind dat Jan moet goed spelen.	…………………………………	
Ik vind dat Jan moet voortdurend luisteren.	…………………………………	
Ik denk dat Jan moet waarschijnlijk rekenen.	…………………………………	
Ik denk dat Jan moet mogelijk komen.	…………………………………	(slechtst)

Bedankt voor uw hulp!